1955
F9

January · 1955

finish

THE MAGAZINE OF

Appliance AND

Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

TP 785
F49
v.12.

Fast Service on Colors and Chemicals

Chemical processing on a large scale requires large reaction equipment.

Adequate warehousing space facilitates inventory control and prompt filling of orders.

by "Ceramic"

Several factors account for the reputation enjoyed by "Ceramic" for unusual promptness in the filling of orders . . . We are specialists, with an organization devoted entirely to service to the ceramic industries . . . We bend every effort to keep adequate inventories in stock at all times . . . Your order gets the personal attention of a principal of the company, who knows your needs and realizes that prompt delivery is often necessary to enable you to maintain uninterrupted production and to make prompt delivery in turn to your customers. We're large enough to serve you advantageously, yet small enough to serve you personally.

When you're in a hurry, hurry to "Ceramic."

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.

WENNING
CERAMIC COLORS
TRADE MARK

Even whirling roller skates won't mar the beauty of PORCELAIN ENAMEL

Years of hard service can't equal a test like this. It shows that *porcelain enamel* stands up to the toughest wear—and still stays bright and beautiful.

If you want to give *your* products extra sales advantages that stand out in comparison with other finishes, make them of Armco Enameling Iron and attach a label bearing the widely-known Armco triangle trademark.

LIFETIME FINISH

The combination of Armco Enameling Iron and fused-on minerals offers a *lifetime* finish. The handsome surface is not affected by time, rust and many other destructive elements. Acid resisting porcelain enamel is not damaged by fruit juices, alcohol or mild household cleansers.

There are no tiny surface pores in Porcelain Enamel to collect dirt and moisture. So stains and dirt are easy to wipe off. Colors never "fade out" even after years of service.

THE "WORLD'S STANDARD"

Armco Enameling Iron—produced for more than 40 years—is known as the "World's Standard." It possesses excellent fabricating properties that are *uniform from one shipment to the next.* Enamelers know what to expect. They consistently report a higher percentage of primes and fewer rejects with Armco Enameling Iron.

We'll be glad to send you complete information. Just write us at the address below.

Spinning skates fail to scratch or damage this porcelain enameled kitchen counter top. Underneath the lifetime finish is a special metal base—Armco Enameling Iron.

ARMCO STEEL CORPORATION

4594 CURTIS STREET, MIDDLETOWN, OHIO

ARMCO®

SHEFFIELD STEEL • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Consider THE RELIABLE KS TIMER for Your Home Appliance

The K-S Timer is a heavy-duty, self-powered, clock-type unit which can automatically operate either an electric switch or a mechanical linkage. It is especially applicable to gas or electric ranges and washing machines.

Lever type escapement assures accurate timing over the complete cycle. Sealed-in construction prevents entrance of moisture and foreign matter. Initial lubrication is sufficient for years of constant service.

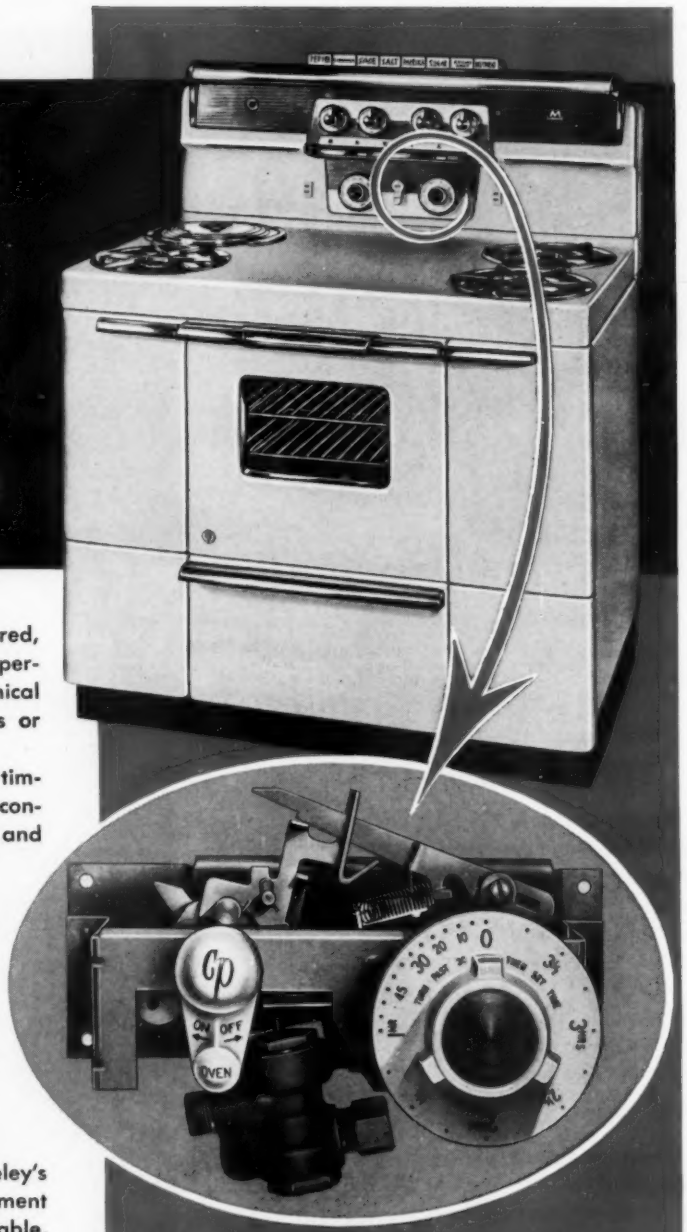
The K-S Timer can be mounted in any position. Switches accommodate push-in terminals to facilitate quick electrical connection.

These units are available for 15, 30, 60, 120 and 240 minute time cycles, each corresponding to a complete rotation of the pointer.

Fourteen years of timer engineering and quality control in addition to King-Seeley's broad experience in automotive instrument production have made the K-S Timer a reliable, trouble-free component.

Write for Descriptive Literature and Quantity Prices

7077



K-S Timer automatically shuts gas valve and closes the damper of this Maytag Dutch Oven Range.

KING-SEELEY CORPORATION
ANN ARBOR, MICHIGAN

finish

MONTHLY TRADE PUBLICATION
Established January 1944
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TErrace 4-5281

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A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is $5.00 per year, domestic. To all other countries $8.00 per year (U.S. funds).

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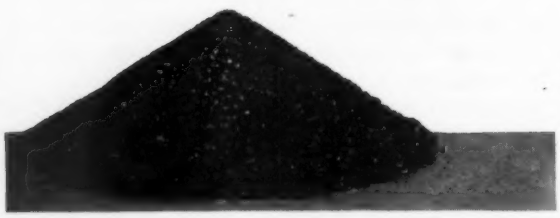
BPA • NBP

finish

METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT

Try Century Vit

GROUND COAT



"Start right from the Steel out" is more than a slogan — it represents a policy and belief at Century that without an easy-working, trouble-free ground coat with good adherence or "Grip" no finish can give trouble-free service for the life of the product.

The millions of pounds of Century ground coat frit that are used every year by our customers give extra assurance of trouble-free finishes, both in the shop and on the finished product.

Century *time-proved* frits "put dollars in your pockets" too. They are priced right to start and there are "in plant" savings that count up fast.

If you haven't tried this economical, trouble-free enamel, contact us and we'll see that you have the opportunity.

An experienced field staff serves the plants of all Century customers. Phone POrtsmouth 7-7260.

FRIT from CENTURY FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY

6641-61 S. Narragansett Ave., Chicago 38, Ill.

it's as easy as this...

FOR

GIBSON

PERMA-VIEW

the window you can see through always!

"out of our carton— into your door"

Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

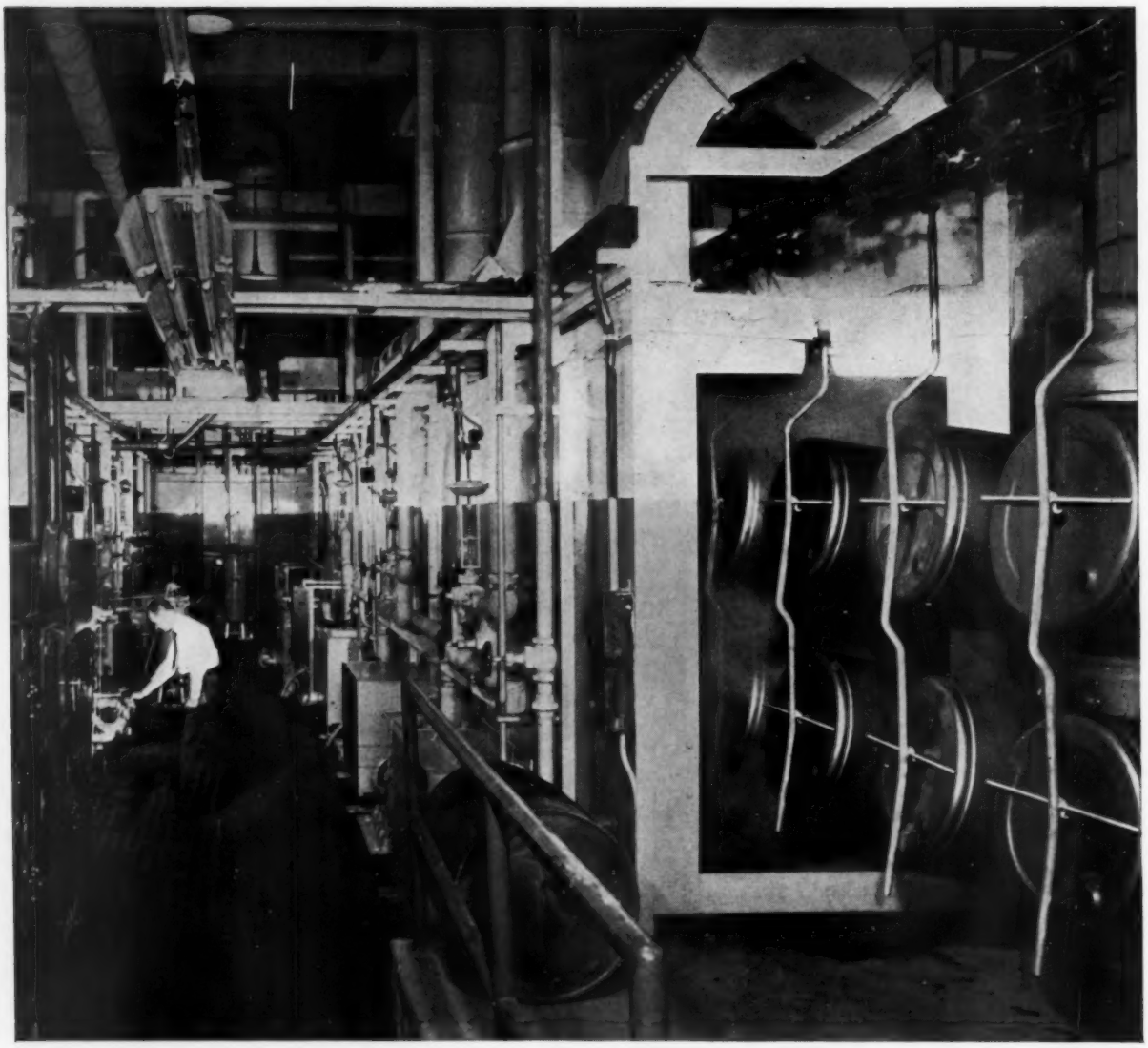
More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone MArket 4-2256

This 1955 model is one of several models which incorporate the PERMA-VIEW window in the range line offered by Gibson Refrigerator Company, Greenville, Michigan.

MILLS PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN



SPRUCE UP YOUR SPRAY LINE!

Two new Pennsalt Cleaners put new life into your old spray washers

Your elaborate spray washing machines are no better than the quality work they produce in the shortest time, with the fewest re-runs. By selecting the proper Pennsalt cleaners you can increase the efficiency of your spray wash operation, put more profits in your pocket. Here are two new Pennsalt cleaners with distinct advantages.

PENNSALT CLEANER 38—a heavy duty spray cleaner for strong detergent action and trouble-free operation. Pennsalt Cleaner 38 has excellent hard water resistance, good rinseability, exceptional detergency! Users tell us Cleaner 38 "sets a new standard of cleanliness."

PENNSALT CLEANER EC-54—an emulsion cleaner which will not boil off, evaporate, or flash at *high use temperatures* between 160 and 200° F. Pennsalt Cleaner EC-54 removes really tough soils from hard-to-clean parts. Non-ferrous metals are cleaned without tarnishing—one cleaning unit can be used to process *all* metals. EC-54 also provides *rust inhibition*. Ferrous parts are protected against in-plant rusting for 1 to 6 weeks.

You can learn all about these new, superior cleaners from your Pennsalt specialist in metal cleaning chemicals. Call him now—or write to us for specific recommendations. Metal Processing Dept., Pennsylvania Salt Manufacturing Company, EAST: 1014 Widener Bldg., Philadelphia 7, Pa. WEST: Woolsey Bldg., 2168 Shattuck Ave., Berkeley 4, Calif.

Pennsalt Chemicals

A BETTER START FOR YOUR FINISH

breaking the color barrier in industrial design

Gentlemen:

The article on "Industrial Designers are Breaking the Color Barrier," in November *finish*, was a superb job and indeed gratifying to us in the Industrial Design Section of International Harvester. We wish to express our thanks to you for making it possible and to the author, Jean Reinecke*.

Benton Dales
Chief Industrial Designer
Refrigeration Division
International Harvester Co.
Evansville, Indiana

*In his article, Mr. Reinecke paid tribute to the staff of Dave Chapman, Industrial Design, who worked with Harvester designers in the development of the products featured in the article—Eds.

home laundering—and hot water

Gentlemen:

We were glad to see the National Home Laundry Conference so well covered in the December issue of *finish*, and also were glad to see the accurate reporting of our own Mr. F. A. McFerran's speech.

M. M. Scott
Ruud Manufacturing Co.
Pittsburgh, Pennsylvania

In his speech, Mr. McFerran reported that homeowners experiencing improper laundering results were not using water that was sufficiently hot—Eds.

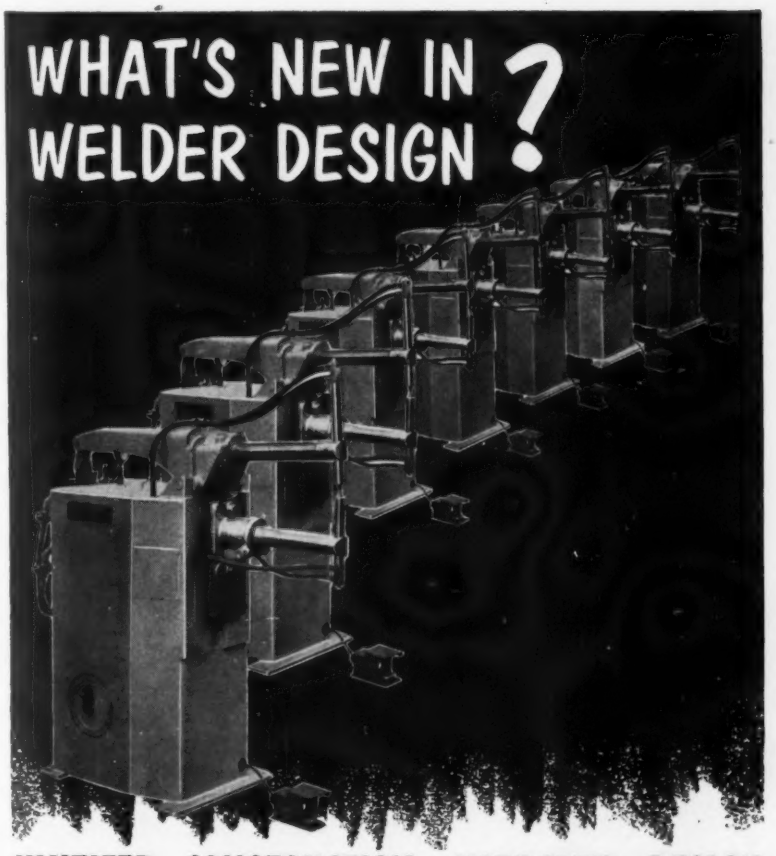
seasonal shipping damage

To Safe Transit Committee:

I wish to take this opportunity to compliment you on the fine presentation of shipping problems as covered in your Safe Transit News. I was most interested in the article regarding "Seasonal Shipping Damage", as this, I feel, presents at least a partial answer to our own experiences, although we have not kept graphs to determine this situation.

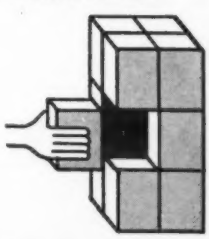
Ray G. Gilbert
Packaging Engineer
Whirlpool Corporation
Clyde, Ohio

Ralph Bisbee, general chairman, National Safe Transit Committee, also touched on this problem in his article on "Making *Safe Transit* Work at Westinghouse," in December *finish*. It was pointed out that shipping damage in the summer months was almost double that of winter months —Eds.



UNITIZED CONSTRUCTION, IMPROVED DESIGN of Federal's Rocker-Arm Spot Welder MEANS BETTER WELDS, FASTER, LOWER UPKEEP

UNITIZED DESIGN
A Federal Exclusive!



Component parts of each system are sectionized and mounted on individual, removable panels. Normal "down-time" is reduced to an absolute minimum; maintenance greatly simplified.

Federal's New Rocker Arm Spot Welders—redesigned from base to tip—to deliver highest production with a minimum of operating and maintenance costs. Feature for feature they are the outstanding low cost spot welders of this type available today.

Here's a few of the many features: Unitized Design, built in sections for easy maintenance and interchangeability; More Space, tapered frame permits greater working areas; Compact Construction, trims bulk—all lines are outside frame—easily accessible without unsightly and dangerous protrusions; Ferrule Fittings, with threaded couplings, permit quick, simple disconnect of all water and air connections; Low Loss Cylinder of new design boosts efficiency as does the new style Low Inertia, streamlined Horn Raising Lever. It's all new! It's welding efficiency at it's finest. It's another reason why welding engineers trust "Federal—First in Resistance Welding."

Federal WELDERS
Warco PRESSES

THE FEDERAL MACHINE AND WELDER COMPANY

WARREN, OHIO

Foote LITHIUM HYDROXIDE

A Primer on the New Chemical Workhorse for Ceramics

ABUNDANT

Vast domestic reserves of lithium ore coupled with expansion of Foote's production unit at Sunbright, Va.—the world's largest lithium chemical plant—these are your assurance of an abundant supply of lithium for your needs.

BASIC

Lithium hydroxide is the long range, low cost unit source of lithium which has been proved satisfactory for use in porcelain enamel frit and glass manufacture.

CONSISTENT QUALITY

You can depend on the chemical and physical uniformity, and stability of Foote lithium hydroxide.

Don't delay. Write for the facts about the economies of Foote lithium hydroxide.

Today as always Foote maintains

LEADERSHIP IN LITHIUM

Kings Mountain, N.C. . . . where Foote is mining the largest known deposits of spodumene.

Sunbright, Va. . . . the world's largest lithium chemical plant.

FOOTE MINERAL COMPANY

412 Eighteen West Chelten Building, Philadelphia 44, Pa.

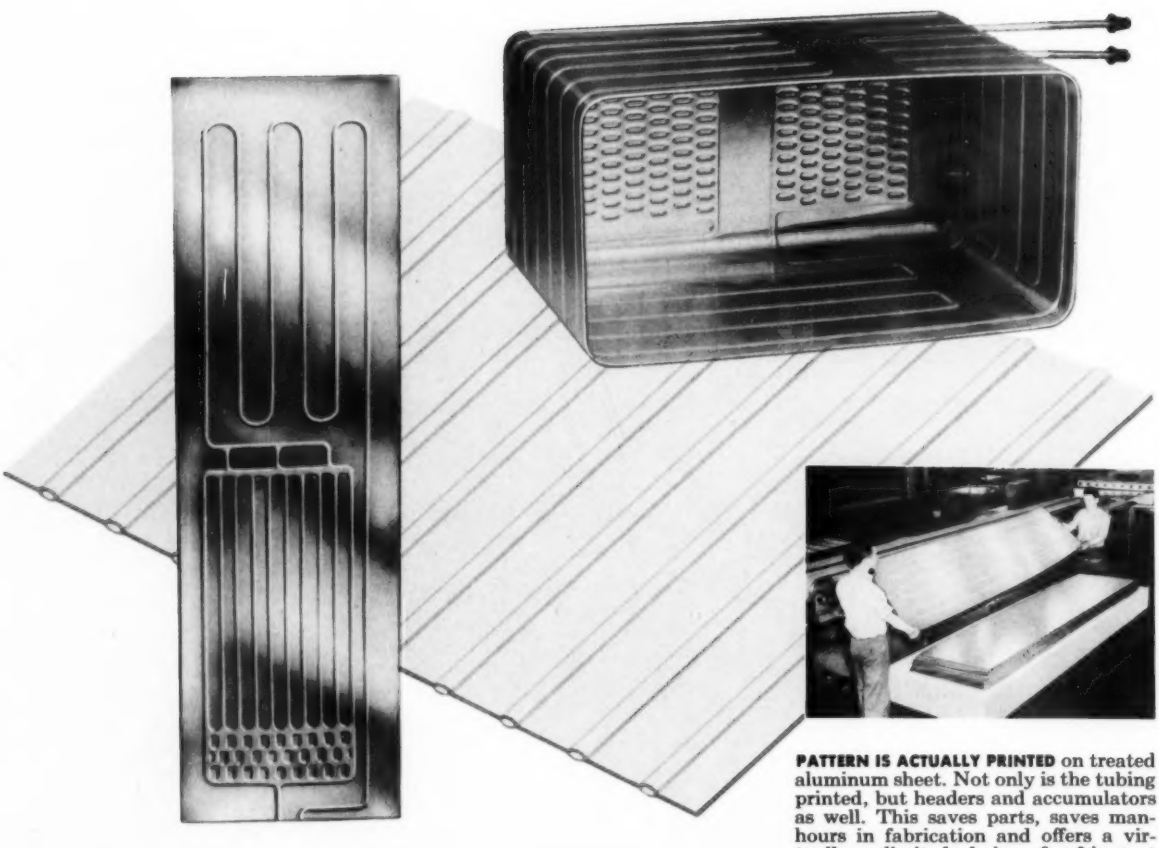
RESEARCH LABORATORIES: Berwyn, Pa. • PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

For Reduced Costs and Improved Performance in Heat Exchanging Applications

SPECIFY

CROSS SECTIONAL VIEW showing tubing as integral part of sheet rather than separate tubing brazed to sheet.

ROLL BONDED



PATTERN IS ACTUALLY PRINTED on treated aluminum sheet. Not only is the tubing printed, but headers and accumulators as well. This saves parts, saves man-hours in fabrication and offers a virtually unlimited choice of refrigerant circuits. Result: an improved product at lower cost.

Printed in U.S.A.

ALUMINUM PARTS

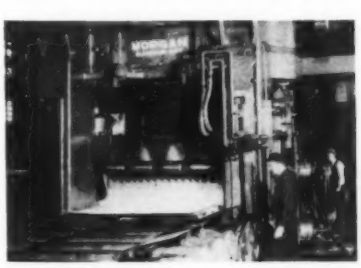
now being produced BY REYNOLDS

Time and again Reynolds has pioneered in new ways to give you more for your money in aluminum fabricated parts. Reynolds Roll Bonding is only the most recent example. This new method of providing sheet with integral refrigerant tubes and accumulators opens up tremendous new opportunities for product improvement to appliance manufacturers for the following reasons.

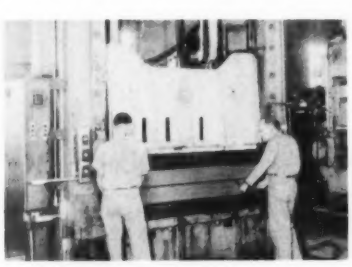
With Reynolds Roll Bonding there is no brazing and no flux contamination. Metal ordinarily used for tubing, accumulators and receivers is eliminated. The passageways are inside the sheet. There are no tubes to bend. Welding is minimized. Many connecting and assembly operations are eliminated. There is no problem of lost conductivity. You can route refrigerants wherever they are needed. Reynolds Roll Bonding is strong and compact. Passageways may be flat, oval or round. Additional length adds nothing to the cost. Passageways themselves act as stiffening ribs.

Reynolds Roll Bonded Aluminum Sheet—available with a smooth surface or an embossed pattern—is an ideal material for refrigerator evaporators, refrigerated freezer liner panels and vertical cold plates. In fact, it should be an economical, efficient and practical replacement for all applications involving heat exchanging where tubing fastened to sheet has been used in the past.

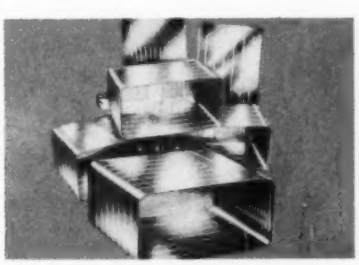
For full details, contact the Reynolds office listed under "Aluminum" in your classified telephone directory or write *Reynolds Aluminum Fabricating Service, 2001 South Ninth Street, Louisville 1, Ky.*



NEXT STEP IS THE BONDING PROCESS. An "unprinted" sheet is placed on top of a "printed" one and the two sheets are metallurgically bonded together. This "bonding" takes place over all the contacting surface *except* where the printed circuit prevents the two sheets from bonding together.



CONTROLLED EXPANSION OF THE PASSAGEWAY. Hydraulic connections are made to edge of sheet where pattern terminates and hydraulic pressure applied. Result: a smooth, clear, leak-free passageway exactly as it was "printed." (Each unit tested and found leak-free at 3,000 p.s.i.)



EXTREME FLEXIBILITY OF DESIGN is one of the principal advantages of Reynolds Roll Bonding. Since the circuit is an integral part of the sheet, there are no limitations imposed by the usual problems of welding, bending, expansion and assembly. This means manufacturing economy and product improvement.

Cleaning Specialists*

*[SPE'CIAL·IST—One who devotes himself to some special branch of activity.]

At Northwest our "special branch of activity" is solving your cleaning problems.

Behind your friendly, competent Northwest Sales Engineer stands a reputation for providing industry with low-cost, analytically-correct, job-adjusted chemical cleaners.

From Northwest's years of experience in formulating the RIGHT cleaner for your specific needs have come such developments as the LO-HI pH PROCESS—for cleaning prior to plating, painting, or vitreous enameling; ALKALUME PROCESS—for preparing aluminum and magnesium for finishing and spot welding; INTERLOX PROCESS—for phosphate coating; SPRA-LUBE—to control over-spray of "today's" paints in water wash paint booths; PAINT STRIPPERS—specific to your needs; SUPER-DRAW & FLUID FILM—for drawing metals.

Remember—YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER.

Northwest's production-tested chemicals and "Right the first time" recommendations will save you money. Northwest Service is as close as your phone.

Our Proving Grounds

are the added plus that enables us to make good on our claim of Better Frits

IN our laboratories top flight Ceramic Engineers carry on continuous exhaustive research and tests which have resulted, thru the years, in notable advancements and improvements of Frits.

perfect conditions prevail in laboratories

It has to be recognized that the almost perfect conditions prevailing in a laboratory test cannot be achieved under practical working conditions.

that's why our Proving Grounds pay off

Here at Ing-Rich our ceramic engineers have the tremendous advantage of day in and day out contact with our large enameling plant . . . where we both enamel our own products and do a large job enameling business.

That's why Ing-Rich Frits will give you higher uniformity, lower rejects. Our ceramic engineers can and do follow the results obtained in the laboratory right down our production lines . . . not occasionally, but day in and day out.

Ing-Rich FRITS are "Plant Tested." The result of that highly desirable and rare combination of science and practical experience.

ING-RICH
FRIT
"The Plant Tested Frit"

INGRAM-RICHARDSON, INC.

OFFICES, LABORATORY AND PLANT • FRANKFORT, INDIANA

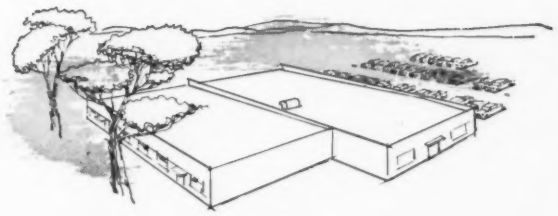
THE finish spotlight

The new Westinghouse built-in range has a 24-inch wide oven—said to be the largest in the built-in range field. The oven is equipped with a "Look-In" glass panel in the door and a "Peek-A-Boo" light so that the user may see inside without opening the door. For surface cooking, a new built-in surface unit will provide four detachable plug-in cooking units.

WHAT DO YOU NEED
in Porcelain Enamel CLAYS?
BETTER
ADHEREN
BETTER
SET
IMPROVED
BUBBLE
STRUCTU
IMPROVED
SURFACE
HIGHER
ACID
RESISTAN
Better Clays from the world's most modern plant

TRY THESE new Ferro "F-P" Clays and prove the difference yourself!

From Ferro's new, greatly expanded research laboratories in Cleveland come *three* exciting new clays. Radically different in formulation, vastly superior in performance, they are the result of a "brand-new approach" followed by a year-long intensive program of product development.



Ferro's new clays for ground coats produce a great improvement in "surface" characteristics, this smoother texture carrying over to subsequent cover coats. The adherence of cover coat to ground coat has also been improved with these new clays. We call them "Ferro-Processed", as each is a blend of carefully selected and quality-checked ingredients.

F-P Green No. 33—Has high bubble structure with set slightly higher than Green Label.

F-P Brown No. 44—Has medium to low bubble structure with set lower than Black Label.

Ferro's F-P Red No. 66, for Titanium Cover Coats—This new clay, while being equal to Red Label in bubble structure, set, tearing and hair-lining resistance, is superior in surface characteristics, reflectance and has much better acid-resistance.

We want you to try these new clays, all of which are produced in our modern clay plant in Nashville, Tennessee. Our field engineers will be happy to work with you in adapting them to your use. If you've not yet started such a program, just drop us a line. We'll have a man there promptly.

FERRO®

FERRO CORPORATION

4150 East 56th Street • Cleveland 5, Ohio

Other plants in Nashville and Los Angeles

In Canada: write FERRO (Canada) LTD., Oakville, Ont.

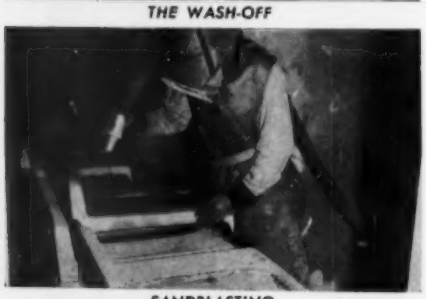
DEFECTIVE PLUMBING-WARE

DEFECTIVE WASHERS AND RANGE TOPS

D-ENAMELING has saved over 30,000 tons of fabricated steel parts

THE CAUSTIC BATH

THE WASH-OFF



SANDBLASTING

SINCE D-Enameling became a permanent part of the appliance manufacturing picture over 30,000 tons of steel which otherwise would have been complete loss have been saved from the scrap pile . . . re-enameled . . . transformed into first class salable condition. It isn't just the steel that's been saved though — it's thousands of dollars, too!

D-Enameling has made it possible for one range manufacturer alone to save as much as 50% of the original cost of range tops. In plant after plant the story of savings resulting from D-Enameling is similar. Is it any wonder why so many manufacturers of ranges, refrigerators, washers, driers, sinks and bathtubs now transform their defective parts and products into profit through D-Enameling?

If you're really interested in cutting costs, it will pay you to get all the facts about D-Enameling now. You'll be agreeably surprised how much the simple economics of D-Enameling can benefit you.

May we discuss this soon?

THESE INDUSTRY LEADERS KNOW FROM EXPERIENCE THAT D-ENAMELING TRANSFORMS SCRAP LOSS INTO PROFIT DOLLARS

ARROW SIGN CO. • BRIGGS MANUFACTURING COMPANY • CAPITAL AIRLINES • CHALLENGE STAMPING & PORCELAIN CO. • CLEVELAND-TENNESSEE ENAMEL COMPANY • CLYDE PORCELAIN STEEL DIV. • CONLON-MOORE CORPORATION • CRIBBEN AND SEXTON COMPANY • CROWN STOVE WORKS • DWYER PRODUCTS CORPORATION • ESTATE HEATROLA DIVISION • FLORENCE STOVE COMPANY, Kankakee • GENERAL PORCELAIN ENAMELING AND MANUFACTURING COMPANY • GIBSON REFRIGERATOR COMPANY • GLOBE AMERICAN CORPORATION • GRAY & DUDLEY CO. • ICE COOLING APPLIANCE CORPORATION • A. J. LINDEMANN & HOVERSON COMPANY • MAGIC CHEF INC. • MALLEABLE IRON RANGE COMPANY • MAYTAG CO. • NORGE DIVISION, Effingham • NORGE DIVISION, Muskegon Heights • PRENTISS WABERS PRODUCTS CO. • GEO. D. ROPER CORPORATION • RHEEM MANUFACTURING CO. • SAMUEL STAMPING & ENAMELING CO. • A. O. SMITH CO. • THE ENAMEL PRODUCTS COMPANY • THOR CORPORATION • TYLER FIXTURE CORPORATION, Waxahachie.

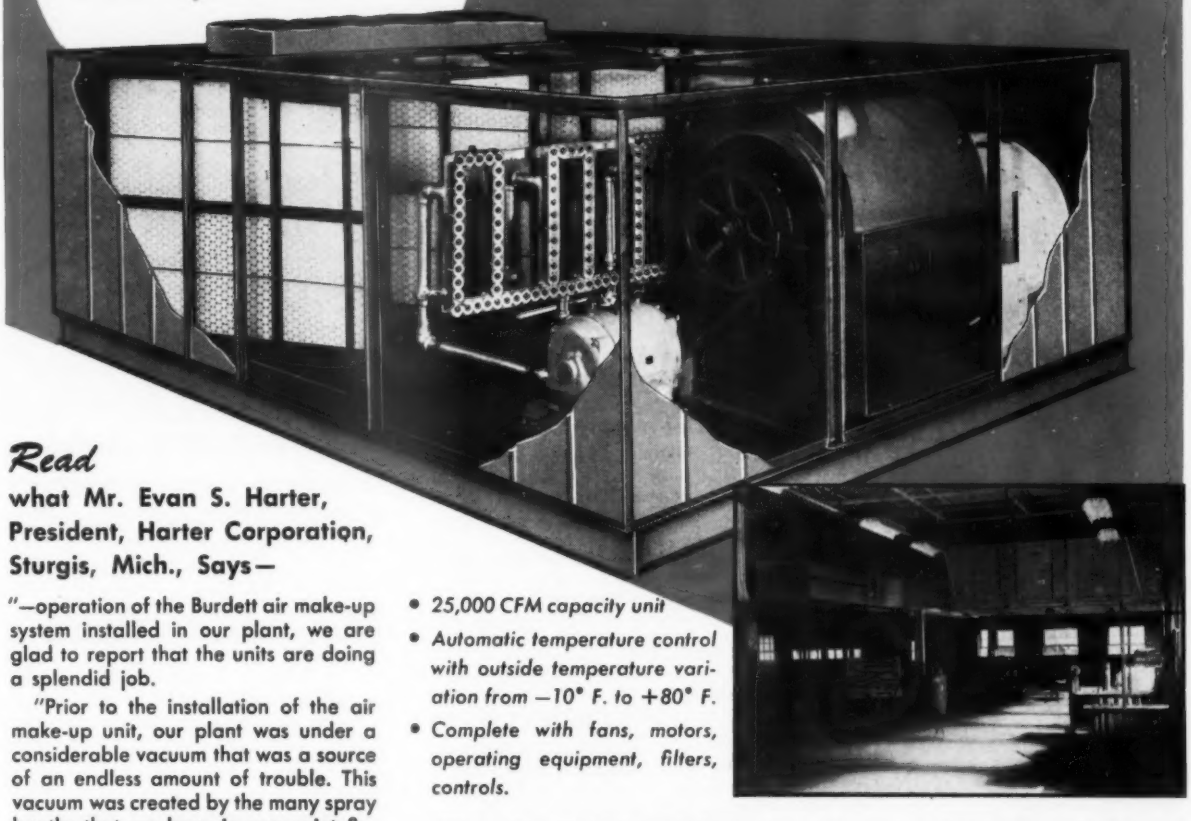
New Process *D-Enameling* Corp.

Highland and New Haven Avenues • Aurora, Illinois

Why Operate in a Costly Vacuum?

When a BURDETT AIR MAKE-UP SYSTEM

—will eliminate this problem and increase efficiency of men and equipment



Read

what Mr. Evan S. Harter, President, Harter Corporation, Sturgis, Mich., Says—

"—operation of the Burdett air make-up system installed in our plant, we are glad to report that the units are doing a splendid job.

"Prior to the installation of the air make-up unit, our plant was under a considerable vacuum that was a source of an endless amount of trouble. This vacuum was created by the many spray booths that we have in our paint finishing department and also by the exhaust system employed in the grinding and buffing department, as well as other exhaust provisions for welding booths, etc.

"By the installation of these air-make-up units we are now able to satisfy air replacement requirements in any portion of our plant without affecting other areas or operations. The reason we chose to install several units of different capacities was so that we could satisfy our exact exhaust requirements regardless of the amount of equipment that was in operation.

- *25,000 CFM capacity unit*
- *Automatic temperature control with outside temperature variation from —10° F. to +80° F.*
- *Complete with fans, motors, operating equipment, filters, controls.*

"Since the installation of these air make-up units:

1. All exhaust systems are functioning satisfactorily and efficiently.
2. The spray booths and polishing lathes are working more efficiently because of sufficient volume of air in the building.
3. The lack of vacuum in the building has made it possible for people to work in comfort and without draft along windows and walls.
4. Doors of the building can be opened and closed by employees or automatic door openers without danger to employees or the necessity of frequent repairs of doors or door frames.
5. We have been able to maintain an even distribution of dampness in the different areas that were previously affected.

"The air make-up units have supplied the proper volume of fresh and heated air to the closely controlled temperature necessary to maintain the operation in each phase of production."

(Signed) Evan S. Harter
President

There's a capacity to suit your purpose— Ask about it!

BURDETT
MANUFACTURING COMPANY
3401 West Madison Street, Chicago 24, Illinois
DETROIT PHILADELPHIA NEW YORK CLEVELAND DALLAS

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT" SYSTEMS, OVENS, HEATERS
AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

DESIGNING A NEW APPLIANCE?

(or re-styling an old one?)

DIALCO

WILL HELP YOU SELECT THE MOST SUITABLE

PILOT LIGHT

AND THE RIGHT LAMP FOR YOUR PRODUCT

Illustrations approx. 80% actual size

No. 521308-991

No. 12-223

No. 313502-111

No. 8-1930-111

No. 101-3830-951

PLANT AT BROOKLYN, N.Y.

Your product benefits 3 ways from the use of a DIALCO Pilot Light:

(1) Enhanced appearance: The glow of light and sparkle of a lens add colorful visual attraction . . .

(2) Greater safety: A timely warning flashed by a pilot light can prevent damage to equipment . . .

(3) Added service: Discs inserted behind lenses can be used to deliver specific messages, such as "ON", "OFF", "FUEL LOW", etc.

Dialco offers the complete line of Pilot Lights, from sub-miniature types to giant units with 1" or 1½" lenses. Shown here are a few popular types:

No. 521308-991 offers a **built-in resistor** (patent #2,421,321) for 115 or 230 volts; also simple external resistors for all higher voltages. The colorful *multi-vue cap* is visible from all angles . . . *No. 12-223* bracket-mounted Socket features *separately sprung contacts.* Hundreds of types to choose from . . . *No. 313502-111* is a 1" unit with friction cap and convex lens with frosted back, and screw terminals . . . *No. 8-1930-111* is a sub-miniature indicator light, non-dimming type . . . *No. 101-3830-951* is a fully insulated two-terminal sub-miniature pilot light with stovepipe lens. Similar units with *mechanical* or *polaroid dimmers* are also available.

Every assembly is available complete with lamp.

SAMPLES ON REQUEST AT ONCE - NO CHARGE

FREE **Brochure on "Selection and Application of Pilot Lights"**

A must for designers and engineers. Contains consolidated information on pilot light assemblies and small lamps. Originally published by "Machine Design" magazine; based on data supplied by the Dialight Corp. Included are working tables, data, photographs, and product information.

Also write for our latest Catalogues.

Foremost Manufacturer of Pilot Lights

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CORPORATION

56 STEWART AVE. • BROOKLYN 37, N. Y.
HYACINTH 7-7600

MEETINGS

HOME FURNISHINGS MARKET

International Home Furnishings and Winter Home Furnishings Markets, The Merchandise Mart, and the American Furniture Mart, Chicago, January 3-14.

HOME LAUNDRY MFRS. MEETING

American Home Laundry Manufacturers Association, annual meeting, Morrison Hotel, Chicago, January 7.

METAL STAMPERS

Chicago District, Pressed Metal Institute, dinner-meeting, Graemere Hotel, January 11.

HOUSEWARES MFRS. EXHIBIT

National Housewares Manufacturers Association, annual national housewares and appliance exhibit, Navy Pier, Chicago, January 13-20.

PLASTICS TECHNICAL MEETING

Society of Plastics Engineers, annual national technical conference, Chalfonte-Haddon Hall, Atlantic City, January 19-21.

PLANT MAINTENANCE SHOW

Plant Maintenance and Engineering Show and Conference, International Amphitheatre, Chicago, January 19-21.

HEATING, VENTILATING SHOW

American Society of Heating & Ventilating Engineers, international heating and ventilating exposition, Convention Hall and Commercial Museum, Philadelphia, Jan. 24-28.

ENAMELER CLUB MEETINGS

Midwest Enamelers Club, luncheon-meeting, LaSalle Hotel, Chicago, January 29.

Eastern Enamelers Association, luncheon-meeting, Sylvania Hotel, Philadelphia, January 29.

DOW CORNING CORPORATION

Silicone News

FOR DESIGN ENGINEERS

Low Density Silicone Foams Are Nonflammable; Have Heat Distortion Temp Above 700 F

There's a solution now to problems involving nonflammable, low density foamed structures with good thermal and electrical insulating properties, buoyancy after long exposure to water and superior compressive strength at temperatures in the range of 500 to 700 F. What's more, such structures are easily made by foaming completely formulated silicone powders in place or sandwiched between metal sheets or silicone-glass laminates, by thermoplastic shaping before curing or by cutting from cast sheets or blocks.

Identified as Dow Corning R-7001, R-7002 and R-7003, these non-toxic silicone powders produce foams with a uniform, multipore structure that is predominately spherical and unicellular. Densities in the range of 10 to 18 pounds per cubic foot can be produced. Here are typical properties of open pan foams.

TABLE I

	R-7001	R-7002	R-7003
Expansion Temp, F	320	320	320
Density, lb/cu ft	12	14	16
Cell Size, inch diameter	<0.08	<0.08	<0.08
Compressive Strength, psi			
at 77 F	100	200	325
at 77 F, 200 hr at 500 F	100	190	310
at 500 F, 1/2 hr at 500 F	5	25	70
at 500 F, 200 hr at 500 F	20	45	80
Weight Loss, %			
during expansion	1.2	1.3	1.0
1000 hr at 500 F	3.5	2.6	2.6
1000 hr at 570 F	8.0	4.2	4.2
72 hr at 700 F	8.5	5.2	5.2
Water Absorption, %			
24 hr immersion	3.2	2.3	2.1
Heat Distortion Temp, F	>700	>700	>700
Flame Resistance	———	Do Not Burn	———
Dielectric Constant, 10^6 cycles	1.23	1.25	1.26
Power Factor, 10^6 cycles	0.0004	0.00102	0.00105
Thermal Conductivity BTU/hr/sq ft/°F/in. thickness	0.3	0.3	0.3

5 MIL SILASTIC DIAPHRAGMS SENSITIVE FROM -22 to 230 F

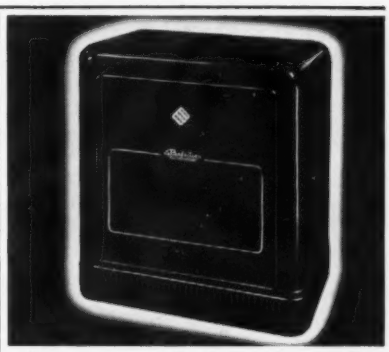
Wanted—A diaphragm for aircraft use that can be produced in commercial quantities to register, in thousandths of an inch, changes in air pressure at temperatures from —22 to 230 F; must resist moisture; withstand vibration and shock. That's a problem that Westinghouse materials engineers couldn't solve with such conventional materials as thin metals, natural or butyl rubber. So they met all requirements by developing commercial techniques for molding Silastic membranes, as little as 5 mils in thickness, to aluminum discs. The process requires utmost cleanliness and precision including extremely accurate control of processing time, temperature and curing schedules. *No. 20*

Among many potential applications, foamed structures with these properties and handling characteristics may be useful as core materials for propellers and airfoils and, in the form of sandwich structures, as radomes and fire walls in aircraft. They hold promise as thermal insulation for range oven doors and portable ovens.

Low density combined with low water absorption and nonflammability suggest a possible use as buoyant components in boats and ships. Heat stability combined with good dielectric properties suggests application as electrical insulating materials at high temperatures or where conventional insulation is hard to apply. *No. 19*

New 1955 Reference Guide to Dow Corning silicone products gives in 8 pages a brief but comprehensive summary of the properties and applications for the silicone products that are most widely used. Products are indexed by type of application. With increasing effort devoted to product improvement and cost reduction, such a reference guide to this remarkably stable group of engineering materials becomes increasingly important to design, production and maintenance engineers. *No. 22*

Scratching or breaking of glass containers during filling operations or in shipping can be substantially reduced by treating them with Dow Corning EF-4010 Emulsion. Easily applied in the final steps of manufacturing glass containers, it requires no special equipment; curing temperatures are not critical. It can also be applied to aged glass and cured by heating. *No. 23*



Silicone Finish Improves the Appearance of Space Heater

Distinctive appearance and longer service life at no extra cost have been achieved by the Perfection Stove Company of Cleveland through the use of Glidden's Nubelon-HR, a modified silicone finish based on Dow Corning resins.

According to Perfection, "Rich as aged leather in appearance, the finish we get by applying a light coat of mahogany over a primary coating of russet colored Nubelon-HR is rugged, tough, and very heat resistant. It retains its color and luster for long periods of time. We have been using it for over two years on all our oil heaters, with excellent results."

Nubelon-HR is also more consistent and easier to apply than organic resin based enamels. Supplied at a proper consistency for spraying, the labor and material cost of thinning are eliminated, and its slightly higher cost per gallon is offset by the effectiveness of thinner coatings. Finished parts are baked 30 minutes in a traveling oven at a top temperature of 480 F. *No. 21*

Design Edition 5

DOW CORNING CORPORATION - Dept. 5301
Midland, Michigan

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Canada: Dow Corning Silicones Ltd., Toronto; **England:** Midland Silicones Ltd., London; **France:** St. Gobain, Paris

Appliance management, marketing meeting

including condensations of some pertinent addresses before the Institute of Appliance Manufacturers at their year-end meeting

AT the year-end meeting of the Institute of Appliance Manufacturers, held December 6-8 at the Netherland Plaza, in Cincinnati, industry leaders got right down to the bottom of the problem of making an adequate profit.

Discussion covered all phases of operations — design, management, purchasing, production and marketing. One executive summed up the problem with the appropriate comment — *"You can't support a retooling program by price cutting."* The following are condensations by *finish* editors of a few of the many constructive talks.

Comments on appliance merchandising

by Ira J. Rapson • ASSISTANT TO SALES MANAGER, MICHIGAN CONSOLIDATED GAS CO.

A GOOD manufacturer-distributor-dealer combination can lick *any* sales problem.

Will end 1954 as 2nd best year in history.

The first concern of manufacturers —built-ins and color.

Product lines will expand by 4 times due to color—distributor problem enlarged by 400% to 500%.

The salesman's opposition to color is "a silly thing". Architects, builders and decorators are sold on color.

COLOR IS HERE—the only thing we can do is sell it.

It may mean "either in color or not in business".

No reason for "annual" models. Don't change models unless you really have something *new*—then offer it on a one line only basis first.

Warehousing and turnover are the retailers' major problems. (20 models each of 3 or 4 lines is not practical).

75% of appliance sales in Detroit go through regular channels of department stores, furniture stores, chain appliance stores, authorized dealers and the utility. Utilizing creative selling these channels *can* compete with the discount houses.

Two things hold back retail appliance sales: (a) a broad streak of inertia, and (b) unwillingness to do the things we know have to be done.

Never hire an "experienced" salesman—get a new one, not a used one.

20% of the appliance manufacturer's time should be spent selling his *product* . . . 80% should be spent showing *salesmen* how to sell the product.

Train distributor salesmen to train dealer salesmen.

Case histories: (a) a group of 12 dealers showed a 300% increase in business by holding 8:30 AM sales meetings. (b) Of four salesmen in a dealer's store, one decided to make "outside" calls—was doing more business at end of 1st week than the combined sales of remaining three.

Using the telephone to get floor traffic . . . personal call back on single appliance buyers . . . direct mail . . . personal canvass . . . are some methods for increasing sales at retail.

Important points in "selling for profit"

by A. B. Ritzenthaler • VICE PRESIDENT—SALES, THE TAPPAN STOVE COMPANY

IF you are *selling* it will be profitable.

Question: "Why should *anyone* sell without profit?

Requirements: (a) A properly styled product, (b) a properly priced product, and (c) good men to sell the product.

Points from the Ritzenthaler suggestions:

1. Study the role of "loss leaders" —*every* transaction should carry a profit.

2. Examine the geographic distribution pattern to see if the dealer organization is properly spread and *properly served.*

3. Be sure the *sales compensation plan* is fair to the manufacturer and fair to the salesman. There must be incentive.

4. Work on *dealer training* (one of the weakest points in appliance selling).

5. Develop *inventory control*—so that seasonal demands can be met without excessive inventories.

6. The roll of *new products* is important. Develop a product diversification program.

7. Carefully select *dealer outlets*: Specialty, Furniture, Department Store, Plumbing and Heating, Utility, etc.

8. *Retail sales training* must get attention. For ranges it should include such features as cooking schools.

These and other similar suggestions

all enter the "*Selling for Profit*" picture.

There are some differences in every business, but the *basic principles* of business success are somewhat alike.

Analyze to reduce cost.

Become a leader—not a follower in *product design.*

War on costs—through good purchasing

by Bruce Henderson • VICE PRESIDENT—PURCHASES & TRAFFIC WESTINGHOUSE ELECTRIC CORP.

GOOD purchasing men should be capable of taking advantage of the opportunities for improvements and cost cutting engineering. The experience of suppliers can be very helpful in enabling the small manufacturer successfully to compete with the larger companies supporting large research and engineering staffs.

Case histories (samples displayed)

(a) small component reductions, through design changes, suggested by suppliers:

$2.14 to 98c
another .98 to 45c

(b) a $28,000 per year saving on one item

(c) part for a vacuum cleaner—20% reduction in cost

(d) a range part—supplier and purchasing man got together—$1.25 to 95c and a labor saving

(e) a 40% difference in cost on a home laundry component and a labor saving in assembly.

Savings *can* be made if the purchasing man knows his business and his products and wants the help of competent supplier representatives.

Develop accurate and fast market reporting

by Parker Ericksen • VICE PRESIDENT, AVCO MANUFACTURING CORPORATION

APPLIANCE manufacturers should develop painstaking, accurate and fast market reporting systems as the first major step in increasing profit margins.

A survey of several leading appliance manufacturers showed profit ratios have been cut 50% at the manufacturers' level, and that the dealers' rate of return has dropped to 1.2%.

It is an arithmetical fact that a miscalculation of 1% by a producer as to his proper share of the market, plus a 10% error in estimating the industry volume, results in sufficient over-production to start a wave of price cutting. If similar errors are made by two or three other manufacturers, the situation is even more serious.

The entire appliance market quickly feels the mistakes made in a given appliance line when bargain basement ads siphon away consumer dollars that would otherwise be spent for other more profitable appliances.

Too many of today's appliances differ only in styling from those of five years ago. A survey of the industry shows that 49% of the "new" refrigerators sold in 1954 were models from prior years.

Automation for the stove industry

by Fred V. Gardner • FRED V. GARDNER & ASSOCIATES

THE stove industry is not ready for "automation" in its sense of the completely "automatic" machine.

It's not as easy to cut costs by automation as many think.

May save labor and then spend more in change over of models and in inventories and floor space than is saved.

A single automatic unit won't fit into a "conventional" production line.

It is possible to create costs that will take 20 years to recover—even if the resulting product shows lower production cost.

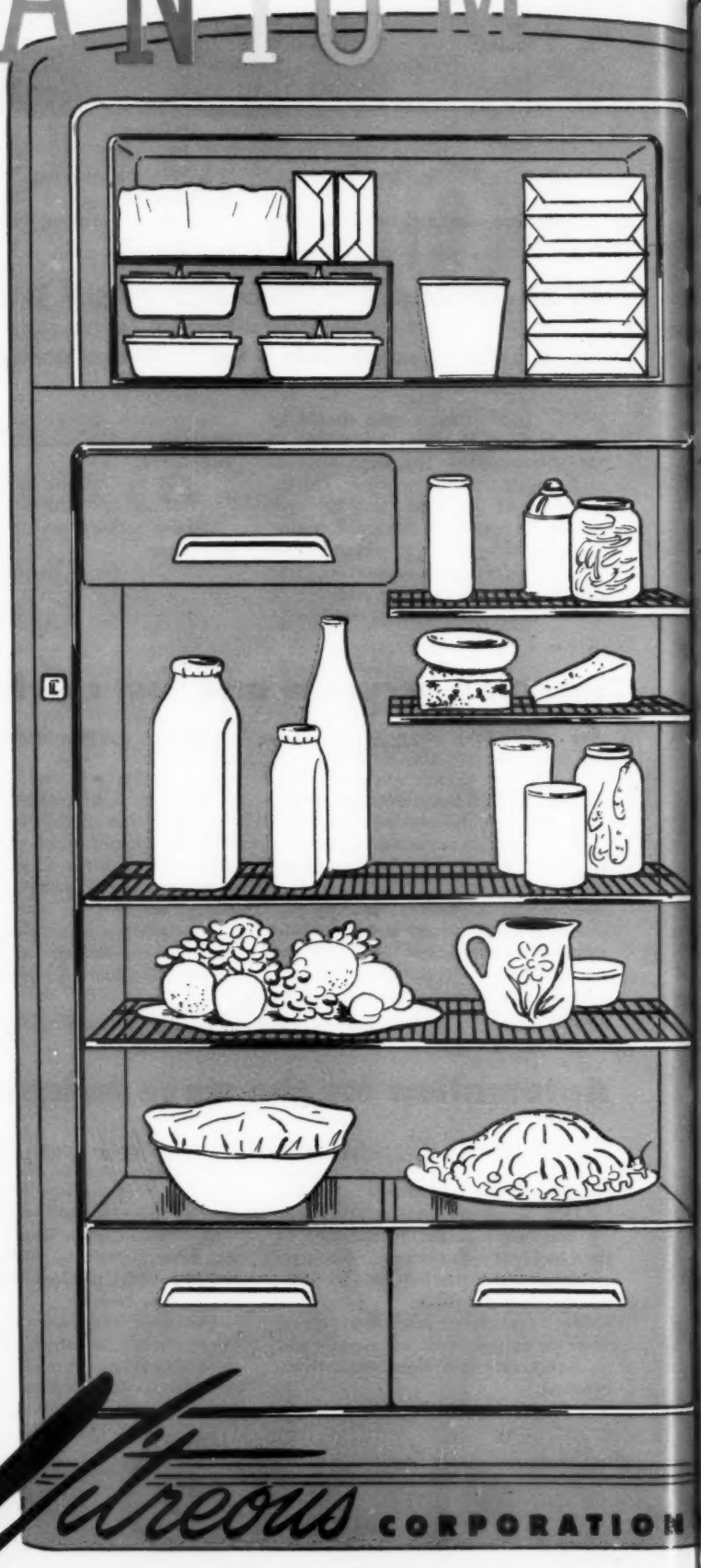
Question: Have you made a plant "flow chart" recently? There is almost always opportunity for improvement in production flow.

Suggestion: Put clocks (with solenoids) on production equipment and determine what percentage of the time it is actually in operation. (May find it operating less than 50%.) The mere presence of the clocks may increase operating time by 20%.

Materials handling costs are an increasingly important factor.

Automation is here to stay, but it is a long time problem.

TINT-TANIUM



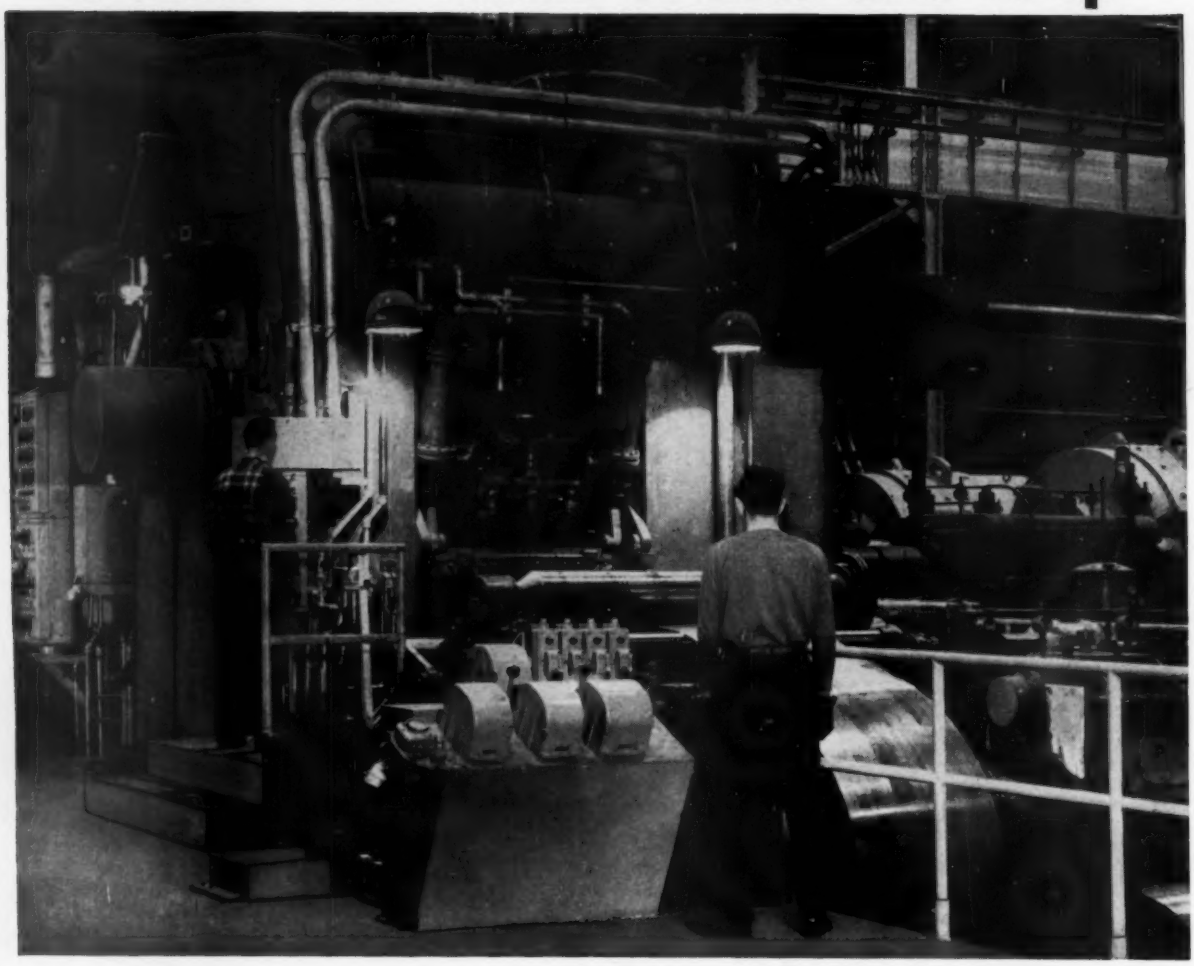
Tint-Taniums have firmly established themselves in regular daily production in some of the nation's most respected appliance manufacturing plants. These colored frits, made exclusively by Chicago Vit, provide a number of distinct production advantages foremost among them being unequalled color stability. They are handled as easily as white titanium frits, and completely eliminate the chance for human error that exists in systems where colors are added at the mill. Tint-Taniums also bring you economic advantages, and give your finished products fresh new sales appeal. So, if you plan to use colors in your new products, you'll find it profitable to choose Tint-Taniums. There's nothing else like them!

Chicago Vitreous CORPORATION

1425 South 55th Court • Cicero 50, Illinois

THE NEW CONCEPT IN COLOR
is an exclusive Chicago Vit
development that's been Proved
by Millions of Pounds in production
THERE'S
NOTHING LIKE
TIN TANIUM

You'll like our service and the quality of our cold rolled sheets and strip



Cold reduction mill at our Indiana Harbor Works, now completing its first year of full-scale operation.

Customers like the uniform high quality of our cold rolled sheets and strip. They find that with Youngstown they have few rejects, low fabrication costs.

Youngstown cold rolled sheets and strip are held to rigid, high standards of ductility, tensile strength and other forming characteristics that mean money in your pocket.

Let us schedule your requirements NOW. Whether you need a carload a week or a few coils per month, you'll like our service and quality.

QUALITY YOUNGSTOWN SERVICE

Youngstown

COLD ROLLED SHEETS AND STRIP

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

The ABC's of metal stamping

Section III — stamping operation terminology

by James M. Leake • PRESIDENT, THE LEAKE STAMPING COMPANY, MONROE, MICHIGAN; AND TECHNICAL CONSULTANT FOR FINISH.

THIS is a sequel to an earlier article (September 1954 *finish)* which covered, in two sections, terminology of stamping equipment and materials. Written in non-technical language, these articles are designed as a contribution to a more complete understanding of stampings and to assist in the achievement of greater uniformity of industry terminology.

This second article covers terminology of stamping operations.

General classifications

Shearing, forming, drawing and extruding are the four very broad classifications into which most stamping operations may be placed. In turn each of these groups may be subdivided into individual operations that have been descriptively named to more accurately portray the type of work being performed.

Shearing group

This classification embraces every mechanical means by which metal is cut in the fabrication of a stamping in its path from raw material to the finished product. *Stock preparation, blanking, punching, piercing, pinch trimming, slitting, trimming and shaving* are the general classifications of operations that are included in the shearing group.

Stock preparation

Square shearing is the operation of shearing flat rolled material to the required width in a squaring shear to prepare it for further processing. *Slitting* is the operation that slits wider coiled material into proper widths for subsequent operations. Coiled rolled stock is usually fed automatically into die operations.

Blanking

The blanking operation embraces the shearing of the entire periphery of a part from rolled material. *Die blanking* includes the complete shearing of a blank in a blanking die with every stroke of the press. *Square shear blanking* denotes the shearing of a blank bounded by straight sides. *Circle shear blanking* describes the blanking of round blanks in a circle-type shear machine.

Punching

A *punching operation* identifies the process of shearing a hole with a flat nosed punch having a diameter or outline that equals the size and shape of the desired hole. *Perforating* is a multiple punching operation wherein many holes are punched, and often in a regular pattern. A *holecutting operation* refers to a punched hole that is large in relation to the part, or the other holes in the part, or over 2" across. *Slotting* indicates the punching of a hole that is long in proportion to its width.

Piercing

A *piercing operation* describes the operation wherein a pointed punch is forced through a part in such a manner that it makes a hole, encircled with jagged protruding edges. A *burring operation* produces a burr or flange of more uniform height around a hole by means of first punching a smaller hole before an enlarged section of the punch forces the surrounding metal into an annular flange about the hole.

Trimming

A *trimming operation* indicates the removal of superfluous metal that is considered unacceptable in an untrimmed state for further processing or as a finished stamping. The outlines trimmed may be substantially flat to permit trimming with a direct perpendicular approach of the cutting steels or in the case of trimming the edge of a cylindrical stamping a "shimmy" trim die, a trimming machine or a pinch trim die may be used.

Pinch trimming, as its name implies, consists of having a protruding ledge extend outwardly from a punch of a drawing die in such a manner as to pinch off or sever the surplus metal of a drawn stamping. *Notching* is a localized trimming operation that shears an indentation inside of the general outline of a part or on the outside of the general contour of a hole of a stamping.

Shaving operations are performed by flat faced punches that remove an amount of metal equal to approximately 1/8 of the metal thickness from the edges being shaved. Shaving may be for the purpose of removing the breakout of a sheared edge to make it smooth and perpendicular to the adjacent surfaces or in the interest of greater dimensional accuracy. *Broaching* is similar to shaving except the punch has a series of cutting edges with each ledge cutting in succession. *to Page 110* →

the finishing touch makes all the difference

For customer appeal, the appearance of the finish can make the big difference. And for long satisfactory service, the durability of the finish is extremely important. Only porcelain enamel will retain for a lifetime the sparkling beauty that attracted the customer in the showroom, and porcelain offers high resistance to detergents and the action of household acids and alkalies.

Modern titania porcelain enamel is a film that matches its strength with that of the steel to which it is applied. Titanium dioxide is the factor that puts porcelain in the film category. And the titanium dioxides that do this job best are TITANOX-TG and TITANOX-TG-400—the only titanium dioxides made specifically for porcelain enamels.

Consultation with our Technical Service Department will provide assistance in solving your frit problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

® TITANOX

brightest name in the finish

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

2358

T. T. ARDEN

The future is bright for gas appliances

by T. T. Arden • PRESIDENT, GAS APPLIANCE MANUFACTURERS ASSOCIATION; EXECUTIVE VICE PRESIDENT, ROBERTSHAW-FULTON CONTROLS CO.

IF the combined gas appliance industry doesn't do 10 per cent more business in 1955 than in 1954 it won't be for lack of opportunity.

To begin with, various authorities in government and in private and public home-building agree that the new year will see all-time records set in home construction.

Besides the possibility that more than 1,300,000 new homes will be built, there is a great opportunity for us in the fact that Americans will spend better than $6,250,000,000 on rebuilding old dwellings, adding living space, modernizing kitchens, laundries and basements, and generally providing the setting for a huge replacement market for appliances.

3 to 1 uses — 1955/1945

I see where GAMA headquarters figures that by the end of 1955 there will be at least three major uses of gas in the average home where only one existed in 1945. One of the main reasons for this, besides the fact that public acceptance of gas is increasing annually, is that many major builders and realty operators have begun to install the entire 'family' of gas appliances as standard equipment.

Perhaps the best clue to our immediate future is the action taken by manufacturers, distributors and dealers in the final quarter of 1954 to replenish low inventories. It took more than wishful thinking to bolster their confidence.

More gas utilities to merchandise

Another sign of the times is the beginning of a return by many gas utilities to their former status as aggressive merchandisers of gas appliances. Apparently many of those who left this field several years ago to concentrate on building their fuel distribution systems and converting to natural gas are now going back to direct selling of gas appliances or closer sales cooperation with dealers.

Still another healthy sign is the tremendous demand being made by manufacturers on the industry's laboratories for approvals, improvement of present products, and extension of new-products research. The fact of the matter is that A. G. A.'s laboratories at Cleveland and Los Angeles tested almost 5,000 appliances and accessories in 1954 and the rate of application is increasing constantly.

New national plumbing code

It should also be noted here that the new American Standard National Plumbing Code, which GAMA helped formulate, will begin to have a beneficial effect on appliance sales during 1955. Its purpose is to simplify installations of comfort heating, water heating, cooking and other domestic gas equipment.

Opportunity beckons on other fronts, too. Early in 1954 the natural gas utilities and pipeline companies planned to spend $3,551,000,000 during the 1954-57 period, including $1,708,000,000 for transmission and $1,331,000,000 for distribution. In addition, their plans called for expenditure of $364,000,000 for piping other types of gas, for a grand total of $3,915,000,000.

Well, it's a matter of record that these plans are being realized right on schedule. As to what they mean to the gas appliance industry, consider the findings of a utility study begun in 1953.

Utility study ups gas consumption 45% by '57

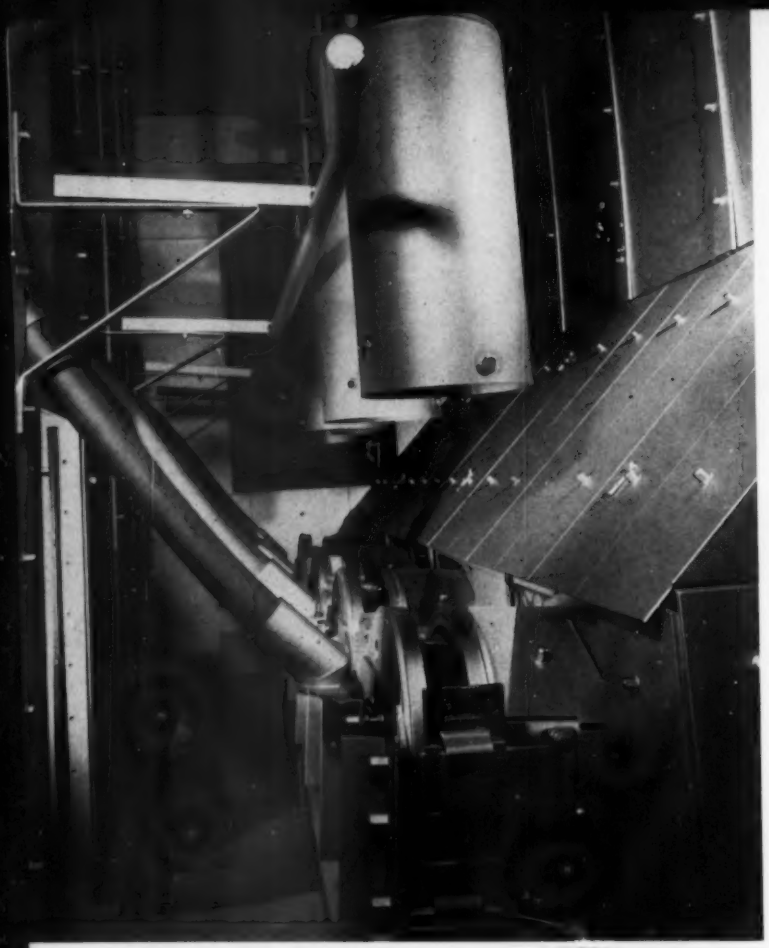
This study showed that by 1957 the number of residential gas customers throughout the United States would increase 12.3 per cent, while the amount of gas consumed would rise 45.2 per cent. The much higher figure for gas consumption meant that people not only would continue to convert to gas, but also would use gas for more purposes in the home than ever before.

Combined appliance production may exceed '53

The house-heating branch of the industry certainly has been making this prediction look good. Comparative records show that 1954 sales of gas central heating equipment were running 14 per cent ahead of 1953.

It is now reasonable to expect that gas-heated homes will total 15,000,000 by the end of 1955 and will exceed 17,000,000 by the end of 1957. Meanwhile, incomplete returns on shipments of gas ranges, water heaters and central heating equipment in 1954 indicated that the total in these categories alone would top the combined total of 5,164,900 units shipped in 1953.

to Page 104 →



Inside the blast cleaning machine, millions of tiny shot clean any scale from the water heater tanks. The shot-blasting also gives the tanks a roughened surface, referred to as "tooth", which helps provide for good adherence of the "glass lining."

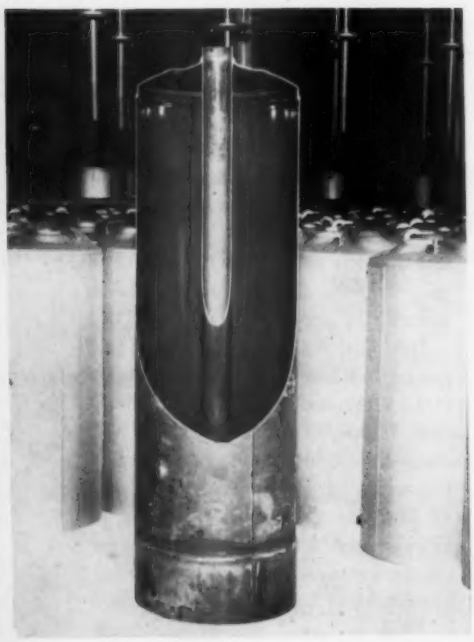
New "Rheemglas"

$1,000,000 invested in new Chica plants — Chicago, South Gate, Cali

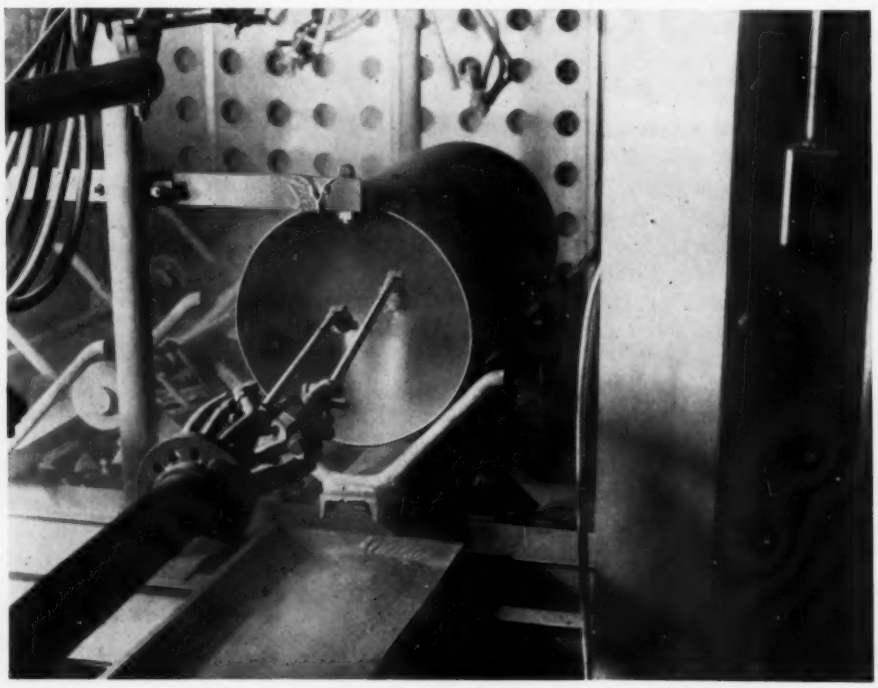
RHEEM Manufacturing Company's new glass-lined water heaters are now flowing from a new continuous production line at the company's plant in Chicago, Ill.

Representing an investment of nearly $1,000,000, the glass-lining installation at the Chicago plant is one of three such installations representing a total investment of nearly $3,000,000, according to William S. Rheem II, general manager, who stated that the other two installations — in South Gate, Calif., and Sparrows Point, Md. — would soon be ready for regular production of Rheemglas water heaters.

Cut-away section of water tank. The glass lining covers all surfaces which are exposed to water.



Shells and heads are sprayed with slip as spray nozzles move into the tank. The shells are rotated and the slip automatically covers the inside surface. A "dust coat" is simultaneously applied to the outside of the tank.



water heater plant

glass-lining installation—total for three and Sparrows Point, Md.—$3,000,000

Editor's Note:

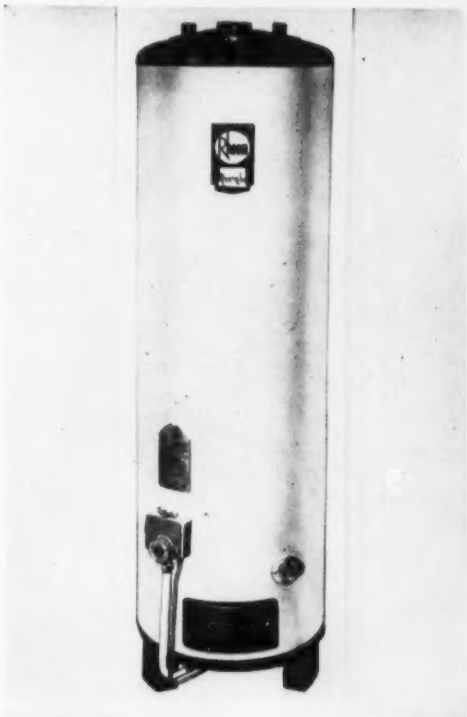
The Rheem Chicago plant has modern production facilities for steel drums, water heaters, and domestic heating equipment. Detailed production information will appear in later issues of *finish*.

Rheem will thus become the first water heater manufacturer to establish glass-lining facilities across the country. The Rheemglas water heaters are being produced in sizes ranging from 20 to 92 gallons. The company also makes galvanized and "coppermatic" water heaters.

Vearl J. Heinis, general sales manager, predicted that sales for the Chicago plant will amount to more than $26,500,000 for 1955, a gain of 6% over 1954.

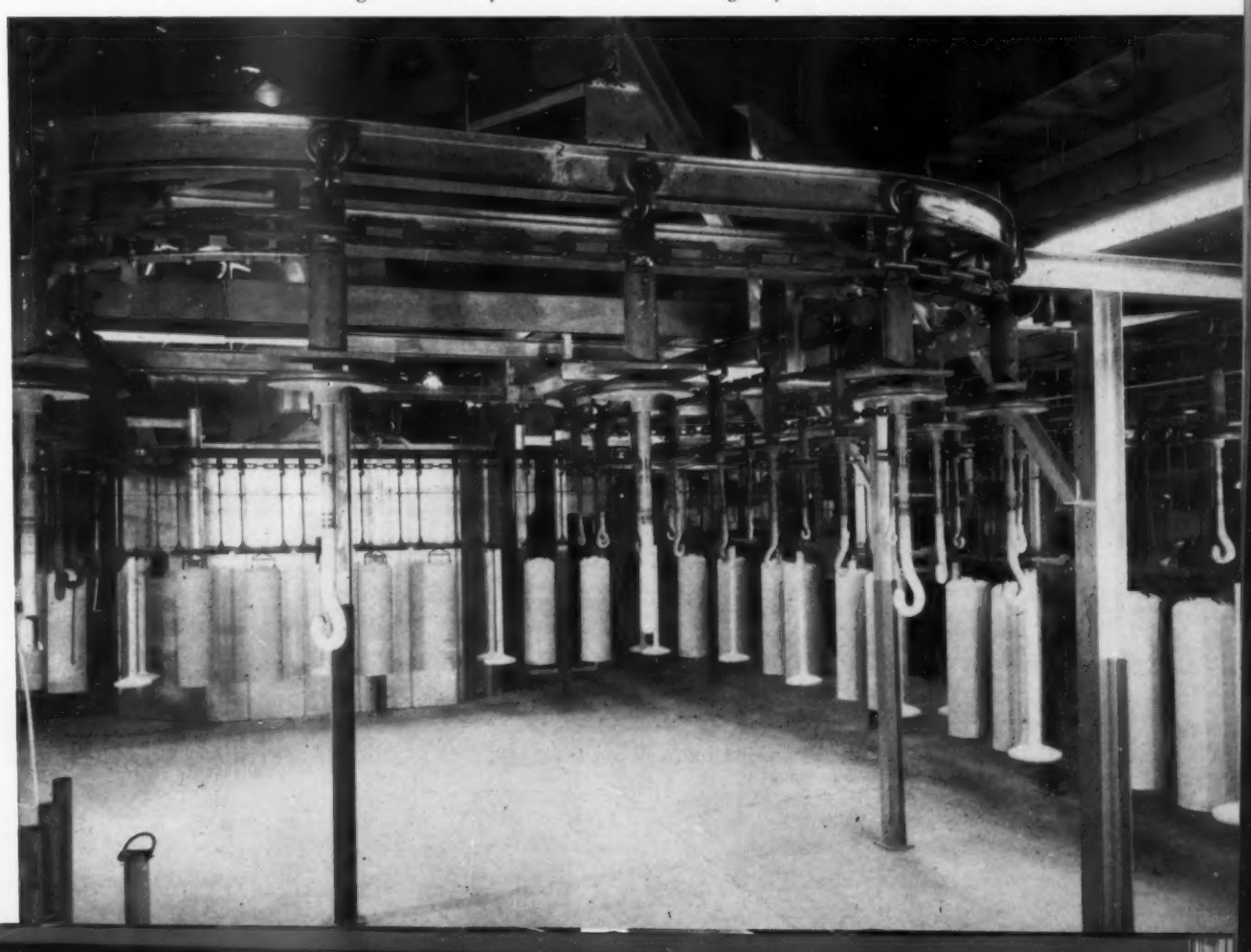
To launch the new series of Rheemglas water heaters, Rheem has prepared the most comprehensive advertising and sales promotion campaigns in its history. Heavy schedules in consumer and merchandising publications will be supplemented by an extensive program of dealers sales promotion materials.

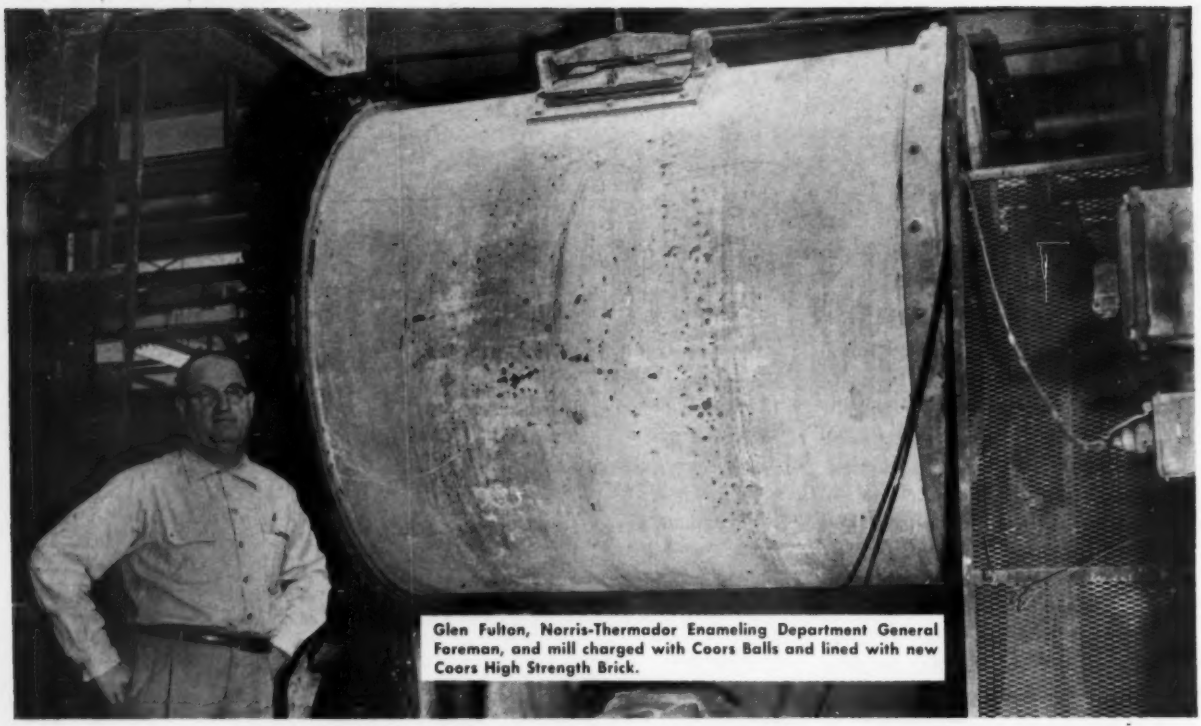
At an open house on December 9 for members of the press, J. P. Makenas, general manager of Rheem's central region, reported that production facilities at the Chicago plant now represent a total investment of $11,000,000. Equipment for fabricating fibre containers, plus other modernizations, will require the expenditure of approximately another $500,000 at the Chicago plant.



Rheem makes both gas and electric glass-lined water heaters. A gas model is shown here.

Following drying, tanks with heads and flues with bottoms are hung on furnace conveyor. Photo shows the assemblies moving toward the furnace where the coating is fired at about 1600° F.





Glen Fulton, Norris-Thermador Enameling Department General Foreman, and mill charged with Coors Balls and lined with new Coors High Strength Brick.

Coors High Density Balls and Liners increase production at Norris Thermador Corp.

"Here at Norris-Thermador Corporation, we have reduced our grinding time, and simultaneously have increased our mill loads up to 50%, by charging our mills with Coors High Density Grinding Balls.

"Also, we formerly added 12 pounds of conventional balls with each charge of frit. No Coors Balls had to be added for a period of time in which 245,000 pounds of frit was ground.

"We are well pleased with the increase in production we have been able to accomplish due to our change to Coors High Density Balls."—Glen Fulton, General Foreman, Norris-Thermador Corporation.

(Norris-Thermador Corporation was the first porcelain enamel plant on the Pacific Coast to use Coors High Density Grinding Balls—and is the first porcelain enamel plant in the U.S. to use Coors new High Density Mill Lining Brick with integral lifter bars.)

Write, wire, or phone your nearest Coors representative, today, for facts and prices!

Coors

PORCELAIN • COMPANY

GOLDEN COLORADO

National Sales Representatives, 127 Rosemont Terminal, 2000 W. 7th Ave., Denver 4, Colo. • Sole agent, enameling industry west of the Rockies, Ulmer-Vinsonia Enamel Product Co., 1407 S. 50th Ct., Cicero 50, Ill. • California sales representative, Melvin L. Jones Co., 5058 Alhambra Ave., Los Angeles 32, Calif.

Two automobiles with air conditioning systems were features of the show. Above is a 1955 Chrysler New Yorker.

The other car with an automatic air conditioning system was this 1954 Nash Ambassador.

ARI educational conference and exhibit

1300 persons attend Minneapolis conference sponsored by the Air-Conditioning and Refrigeration Institute

EVERY section of the country was represented by the 1,300 people who attended the Educational Conference and Exhibits of the Air-Conditioning and Refrigeration Industry held in Minneapolis, Minnesota, November 18, 19 and 20. The 17th Annual Convention of the Refrigeration Service Engineers Society was held in conjunction with the Conference in the Minneapolis Auditorium.

Seventy-seven manufacturers in all lines of air-conditioning and refrigeration equipment and service provided educational displays.

A new feature of this Educational Conference was the display of two air-conditioned automobiles—a 1955 Chrysler New Yorker and a 1954 Nash Ambassador. These proved to be one of the most interesting exhibits as factory experts from both companies answered many questions of those in attendance.

"The display of the two air-conditioned automobiles," said K. B. Thorndike, chairman of the ARI conference committee, "was an effort to keep abreast of the rapid advance in new developments of the industry."

Educational talks, sponsored by RSES, were scheduled on each of the three days.

Speakers who appeared on the program were: Cecil R. Visger, past president, RSES, Kansas City, Missouri, R. J. Thompson, director of service, The O. A. Sutton Corporation, Wichita, Kansas; Tom Morrison, Paragon Electric Company, Two Rivers, Wisconsin; John H. Spence, Hussmann Refrigeration, Inc., St. Louis, Missouri; W. B. Cooper, American Radiator and Standard Sanitary Corporation, Pittsburgh, Pennsylvania; Clayton Cramer, Carrier Corporation, Syracuse, New York; Dr. W. O. Walker, University of Miami, Miami, Florida; Leon Buehler, Creamery Package Manufacturing Company, Chicago; and Bernard Gest, Radio Corporation of America, Chicago, Illinois.

Typhoon Air Conditioning's exhibit showed how hot air furances can be converted to summer air conditioning.

Function and operation of residential air conditioning contro system is explained by B. L. Lerch, of General Controls.

FOR BETTER

"Paint Adhesion"

use

MACCO MACHINE CLEANER **NO. 71**

a phosphate cleaner and rust inhibitor

Illustration shows two sheets of steel, painted at the same time with the same paint and exposed for months to all kinds of weather. On the left is shown a surface which was cleaned and phosphatized with Macco M.C. No. 71. Note how clear and smooth it appears. On the right, a surface on which ordinary cleaner was used. Note peeling and rust blisters.

A MACCO CASE HISTORY*

As in all fields today, purchasers of metal products are constantly demanding more and more in the quality of their paint finishes.

By far the most efficient and economical method of preparing metals for the finest and most enduring paint job is by use of Macco M.C. No. 71. Laboratory and shop tests prove that, on steel, cast iron, aluminum or die cast, Macco M.C. No. 71 provides a corrosion-resistant phosphate coating comparable in quality to that formerly available only through expensive and elaborate methods of preparation.

TESTED ADVANTAGES OF MACCO M.C. No. 71 CLEANER

1. Cleans oil, grease, etc. from metals.
2. Etches metal to give better bond for paint.
3. Gives microscopic phosphate coating, greatly aiding in paint adhesion and corrosion resistance.
4. No special equipment required.
5. Never hardens in the drum.
6. Gives excellent protection against rust prior to painting.
7. Assures best possible protection to painted surface.
8. Can be run in conventional one, two, or three stage washers, as well as in other types.

Use Macco M.C. No. 71 Cleaner and Phosphate Coating and add immeasurable quality to the finish of your product.

* Actual case history, names, etc. can be had by writing today to

MACCO PRODUCTS COMPANY 9210 SOUTH SANGAMON STREET • CHICAGO 20, ILLINOIS

Studebaker-Packard modernization

Packard modernization program now complete—next step is a similar program at Studebaker's South Bend plant

J. J. NANCE

THE facilities phase of the modernization program launched by Packard two years ago, at Detroit, has been completed, and studies are now underway for a similar program at South Bend for Studebaker, James J. Nance, president, Studebaker-Packard Corp., reported to a press conference, December 9.

The former Chicago industrialist *(Hotpoint president)* became president of Packard Motor Car Co. in 1952, and immediately undertook a program to create all new facilities for its car production. Last October, he became head of the combined automobile company when it was formed.

In addition to its automotive program, Studebaker-Packard has recently been awarded major research and development contracts by the government for defense work. Gas turbine and diesel engines are now in an engineering stage preliminary to possible production assignments. The company is presently in production of J-47 aircraft engines.

Packard's 1955 cars, now in production for first national showing at the Chicago Automobile Show in January, are coming from entirely new facilities which are among the most modern in *the automobile industry*. This complete change, which included machining and tooling to produce a new V-type engine and designing and tooling completely new bodies for both Packards and Clippers, was completed in what is considered record time.

Planning modernization program for Studebaker

"It is because of the progress on the Packard modernization timetable," Nance said, "that I am now able to spend a major share of my time at South Bend where studies are moving rapidly forward on a similar modernization program for Studebaker."

He explained that the modernization needs of Studebaker do not parallel those of Packard, but stressed that the Studebaker program must be integrated with development of the corporate program.

3-way selection of personnel

With reference to a management group being formed for the new corporation, Nance said he will follow the same procedure as he did in building the Packard management group. This called for a three-way selection of people in which one-third of the management was promoted from within, one-third was brought in from other automobile companies and one-third were from other industries, selected for their functions, such as finance. Several of these executives came from Chicago, he said. "We expect to follow this same formula in developing a corporate management group for Studebaker-Packard."

With reference to physical changes at South Bend, Nance said he had no new plant construction to announce, and that he could not be too specific at this time. He said that in many areas the Studebaker facilities are now further advanced than the original Packard setup two years ago.

Torsion bar suspension system

Concerning the 1955 Packard and Clipper lines, Nance said the V-8 engines and a new torsion bar suspension system are the outstanding new mechanical features of the cars.

Development of the new "torsion-level" suspension for the first time on production automobiles brings to passenger cars the most dramatic improvement in riding quality and riding control since the introduction of front-coil springing in 1934, Nance said.

This system will give Packard and Clipper cars constant riding height regardless of load, and an improved boulevard ride which, at the same time, will provide greater stability in handling in the higher speed ranges permitted on modern highways.

The new Packard V-8 engine has received certification by the American Automobile Association Contest Board for having successfully completed a 25,000 mile endurance run during which it exceeded every existing National Closed Car record from five miles to 25,000 miles. For the 25,000 mile endurance run, the Packard V-8 averaged 104.737 miles per hour, including all stops.

Although specific horsepower and torque ratings were not disclosed, Nance said substantial performance improvements in the new Packard and 1955 model Clipper cars will be accompanied by fuel economy increases of as much as 20 per cent.

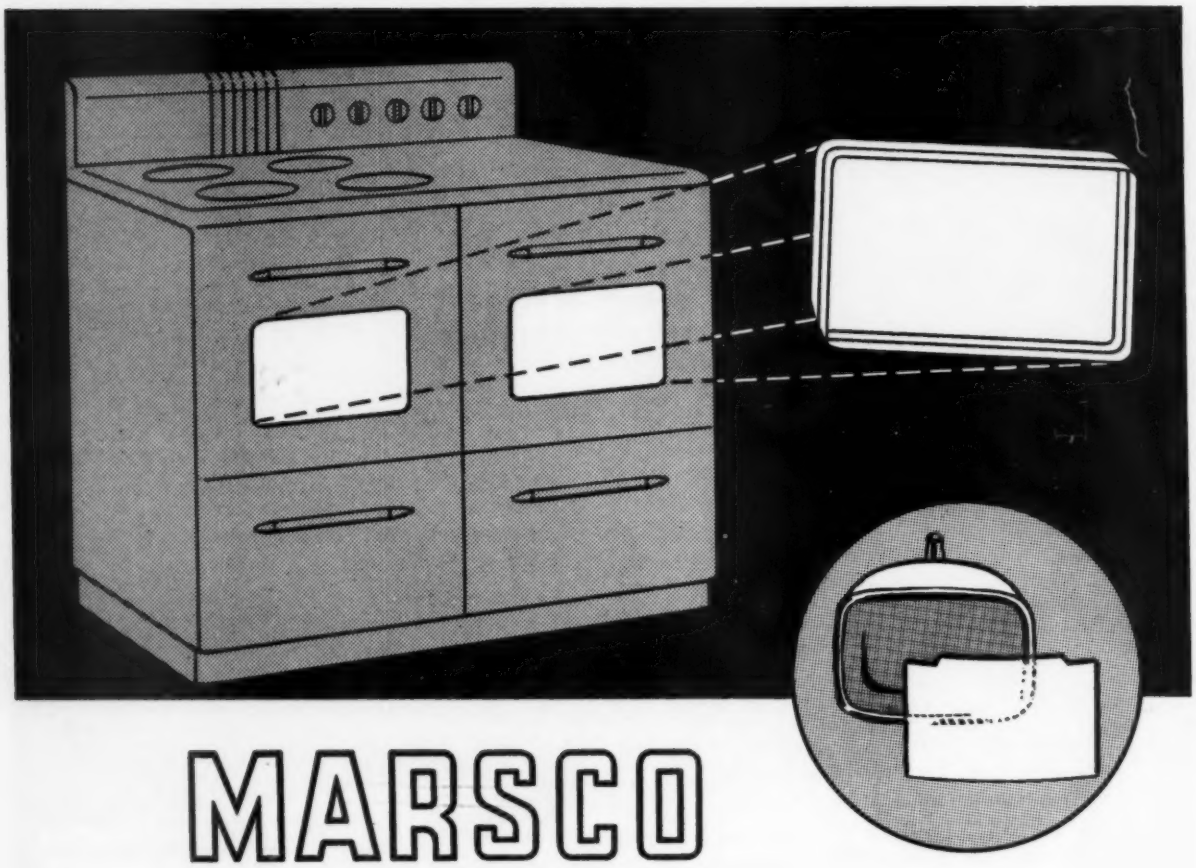
Public introduction of the new Packards and 1955 model Clippers, scheduled for January, has already been preceded by receipt of 20,000 advance orders, Nance reported.

Editor's Note:

Finish **editors are now completing a comprehensive editorial and photographic project encompassing the Packard facilities.**

Editorial coverage of the Utica plant (V-8 engines) and the Detroit plant (body fabrication, finishing and assembly) will appear in the February issue.

Our editors report innovations in these plants of prime importance to appliance and metal products plants outside the automotive field.



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FOR UTILITY AND BEAUTY

Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

Glass — adapted with skill and precision by MARSCO to meet your product requirements — For Today — For Tomorrow.

Glass — flat as can be — precisely shaped to fit.

Glass — bent — convex — drilled — to the most exacting tolerance.

Glass — hardened, heat-treated or tempered to survive your consumer usage unscathed.

Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

Our engineers are experienced in incorporating glass as viewing windows in domestic appliances and television cabinets.
A simple request to us solves your problem.

Bent Glass

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MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

January · 1955

SPECIAL NORGE SECTION

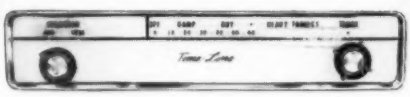
finish

THE MAGAZINE OF *Appliance* AND Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

LUX 1600 SERIES TIMER

Used in the
TIME-LINE CONTROL



featured on the
sales-zooming
NORGE DRYER

Used in the
conventional
NORGE WASHER

LUX Time
YOUR TIME-REMINDER LINE

THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

THE NEW NORGE

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Editor's Note:

In the development of this special section on "The New Norge", the editors of *finish* consulted with top management at Norge to work out a plan whereby a complete story would be told about one of the three manufacturing plants.

The Effingham, Illinois, plant was chosen for complete editorial coverage. The section also includes selected production highlights at the other Norge manufacturing facilities in Muskegon Heights, Michigan, and in Herrin, Illinois.

This special 60-page section of Norge forms the center of a 132-page January 1955 issue of *finish*. It represents the fourth such special section, in over 11 years of publication, devoted to a leading manufacturer of home appliances.

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Dana Chase Publications, Elmhurst, Ill.
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ACKNOWLEDGMENT

The editors of *finish* desire to give thanks and credit to key plant men and supervisors for technical assistance in connection with our photographic and editorial work.

Harold Alumbaugh, press room, Effingham, Ill.
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William Trayers, porcelain enameling, Effingham, Ill.
Harry L. Jacks, organic finishing, Effingham, Ill.
William Beach, photography, Effingham, Ill.
Herman Cook, porcelain enameling, Muskegon Heights, Mich.

HISTORICAL SKETCH OF NORGE

The history of Norge, which reaches back into the early beginning of the industrial era in this country, begins in Muskegon Heights, Michigan. There, in 1877, was founded the Smith Refrigerator & Manufacturing Co., which later changed its name to Alaska Refrigeration Co. Another early milestone was the organization of Detroit Vapor Stove Co. in 1896.

Next came the organization of Detroit Gear & Machine Co., in 1910. Engineers of this company began testing a new Norge refrigerator in 1926. The following year the Norge Corporation was organized; Norge bought Detroit Gear and marketed the *first Norge refrigerator.*

Borg-Warner Corporation was founded in 1928, and the following year both Norge and Detroit Gear became subsidiaries of Borg-Warner. In 1930, Norge introduced the first plug-in self-contained refrigerator.

In 1931, refrigerator production was moved from Detroit to Muskegon Heights with the purchase of Alaska Refrigeration.

Conventional washers were added to the Norge line in 1933, introducing at the same time the all-white porcelain tub. The same year saw the Norge refrigerator move away from the "ice box look" and take on the new feature of "contour styling."

Gas ranges joined the Norge line in 1934 when Borg-Warner took over Detroit Vapor Stove. Norge and Detroit Gear were made divisions of Borg-Warner the same year. The following year, Norge began production of *electric ranges.*

In 1940, when Norge refrigerators added the feature of automatic defrosting, Norge received its first government defense contract, and the Muskegon, Michigan, plant was opened for *defense production.*

In 1945, the Effingham, Illinois, plant was opened for gas and electric range production. Norge produced its *first home freezer* the same year.

In 1946, the Herrin, Illinois, plant was opened for washer production. The manufacture of *automatic washers* began here in 1947.

In 1951, the Korean emergency found Norge back in the swing of defense production.

Clothes dryer production was started at Effingham in 1953. During the past year, 1954, Norge introduced a refrigerator-freezer combination, and the company's Central Research & Development Engineering Department began operations at the Muskegon Heights plant.

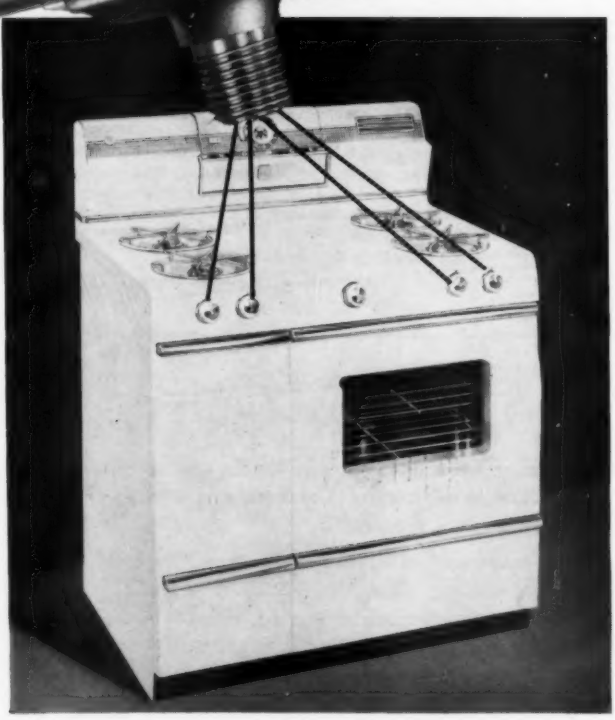
NORGE

and other leading Gas Range Manufacturers Prefer

DETROIT BRASS Valves

Recognition of the leadership of Detroit Brass is attested to by Norge and other distinguished customers who have for years depended on this company as their main source of supply. For more than twenty-five years, Detroit Brass has been a prime supplier of valves for all Norge appliances, an association of which Detroit Brass is especially proud.

New center-stem adjustment Hi-Lo, locking type, three-position valve, equipped with saddle feature for handle alignment. This valve is made by Detroit Brass expressly for the "Infinatrol" Burner on the efficient New Norge Gas Range.



Gas Appliance Fittings produced by Detroit Brass & Malleable Co. include a complete line of valves for ranges, water heaters, space heaters, furnaces and all other types of gas equipment.

Industrial Products Division

DETROIT BRASS & MALLEABLE CO.

Detroit 9, Michigan

JERVIS says: "HATS OFF to NORGE"

For nearly a quarter of a century we have worked hand-in-hand with Norge design and engineering staffs to help create and supply beautiful, serviceable hardware for Norge products. That we may have played some small part in helping you attain the position of leadership you now enjoy in the appliance field gives us a great deal of pride and satisfaction. Accept our salute for past accomplishments and best wishes for the future.

JC JERVIS CORPORATION
GRANDVILLE, MICHIGAN

Another great name turns to Robertshaw® for dependable automatic controls

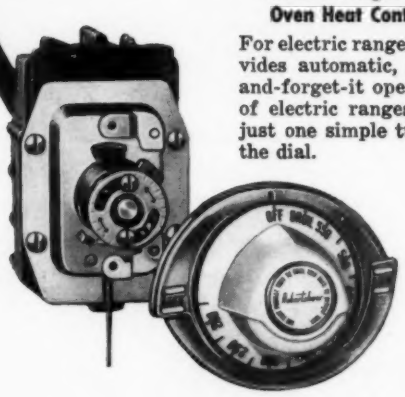
For today's modern automatic gas and electric ranges

ROBERTSHAW
Model TS-11
Automatic Pilot

Made of corrosion-resistant aluminum and stainless steel... built to the highest standards of quality.

ROBERTSHAW
Model BJ
Oven Heat Control

Serving millions of American households with dependable temperature control on automatic gas ranges. Best-known name in oven heat controls.



ROBERTSHAW
Model N Single-Dial
Oven Heat Control

For electric ranges, provides automatic, set-it-and-forget-it operation of electric ranges with just one simple turn of the dial.

Robertshaw-Fulton
CONTROLS COMPANY

Robertshaw Thermostat Division, Youngwood, Pennsylvania

Robertshaw-Fulton Controls (Canada) Ltd., Toronto

Select the controls that help you 'Sell'

The New Norge

by Judson S. Sayre • *PRESIDENT, NORGE DIVISION, BORG-WARNER CORPORATION, CHICAGO, ILL.*

Exclusive feature finish

What's behind the expression — THE NEW NORGE?

Actually, the phrase describes a group of appliance fellows carrying out some basic ideas inherent in this business. The group consists of veterans of Norge and other appliance firms. They are determined to improve the dealer's position by supplying him products that he can sell at a profit. Furthermore, they intend to give the dealer incentive as well as create the consumer demand.

We know that we're on a winning team. Our experience tells us this. I've been in the appliance business for more than 30 years. Red Connell almost matches my time in the industry. So does Virgil Rice. Jack Elmore, Lysle Ardis, and Charlie Martin have been Norge manufacturing men for over 20 years.

What makes us think that we can sell $120,000,000 worth of home appliances in 1955? Do we have a magic formula? Yes, we think so, and that is the NEW NORGE.

Some manufacturers are prone to sit back and question, "How can I get rid of all this merchandise?" This is our thinking — "How can our dealers sell these appliances?" We have about 500 per cent more working dealers now than we had a year ago.

We are out to build new appliances that will move quickly from dealers' stores, providing a profit without too much selling expense. (The clothes dryer is an example.) Actually, this aim is nothing more than a return to the fundamentals and fast action in applying time-proved industry formulas.

For years the appliance industry has been bemoaning the fact that dealers have forgotten how to sell. But really — have we given our dealers enough of the only genuine selling incentive — a profit? We'll never have a better opportunity than in the next year or two.

Dryers, for example, will top the million unit mark this year. This market is only 7 per cent saturated. Automatic washers are still on the upswing and the industry will sell some 400,000 units more this year than we did in 1954. Almost a million conventional washers will move from retail floors. More water heaters will be marketed.

Refrigerators will reach a point approximately 100,000 above 1954 sales levels. Freezers, electric ranges, and gas ranges all will improve this year.

The build-it-yourself trend will make a great impact upon our industry this year as more than $6,250,000,000 is spent on kitchen remodeling alone. An estimated 1,300,000 new homes in 1955 will mean greater sale of built-in ranges.

With appealing products to sell, with dealer organizations stabilized and making a profit, with consumer demand at a record level, the appli-

to Page N-56 →

NORGE *selects* RUDY's new brazed wire condenser

it's safer...

Alert to improvements for its products, Norge has picked the new Rudy copper, hydrogen brazed steel wire-on-tube condenser because it is SAFE, HIGH IN PERFORMANCE AND ECONOMICAL—both in first cost and hidden assembly-line and subsequent service costs. Rudy wire condensers do not leak.

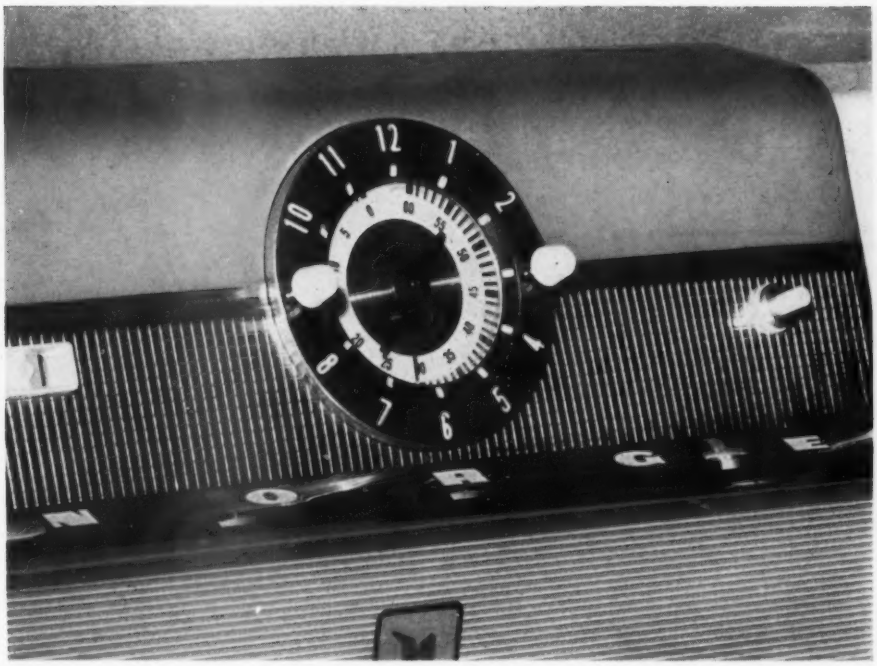
In mild steel evaporators, its new clinched aluminum evaporator, the industry's most advanced air conditioning copper and aluminum coils, as well as in plate-type and fin-and-tube steel condensers, Rudy continues to develop and pioneer products with greater safety, improved performance and increased economy.

Rudy's *ONLY* business is serving the refrigeration industry's end-product manufacturer. Engineering and manufacturing are its specialties. Perhaps we can help you.

THE RUDY MANUFACTURING COMPANY

DOWAGIAC, MICHIGAN

Specialty Manufacturing for the Refrigeration Industry



EQUIPPED WITH Telechron® TIMER

NEW TELECHRON TIMER FOR NORGE...

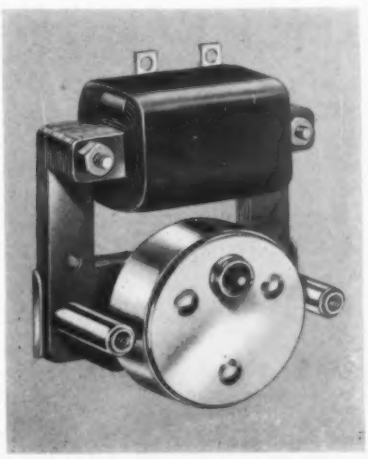
Custom-styled for Volume Sales...Motored for Long Life

The smartest range timers your customers will see this year, like the Norge interval timer pictured above, will be Telechron timers. They are styled with your range sales in mind . . . designed to help sell more ranges, to more customers, in more stores. And . . . Telechron timers and motors are low in price to out-value competition.

The smart new timer shown here is custom-styled to Norge specifications. The makers of Telechron timers will be glad to work with your designers to style timers to meet your needs.

Telechron single and two speed interval timers and Telechron 60-minute and 4-hour interval timers are famous for year-after-year service-free operation that keeps customers satisfied.

Write, wire or phone for detailed information to Telechron Timers and Motors, General Electric Company, Homer Avenue, Ashland, Mass.



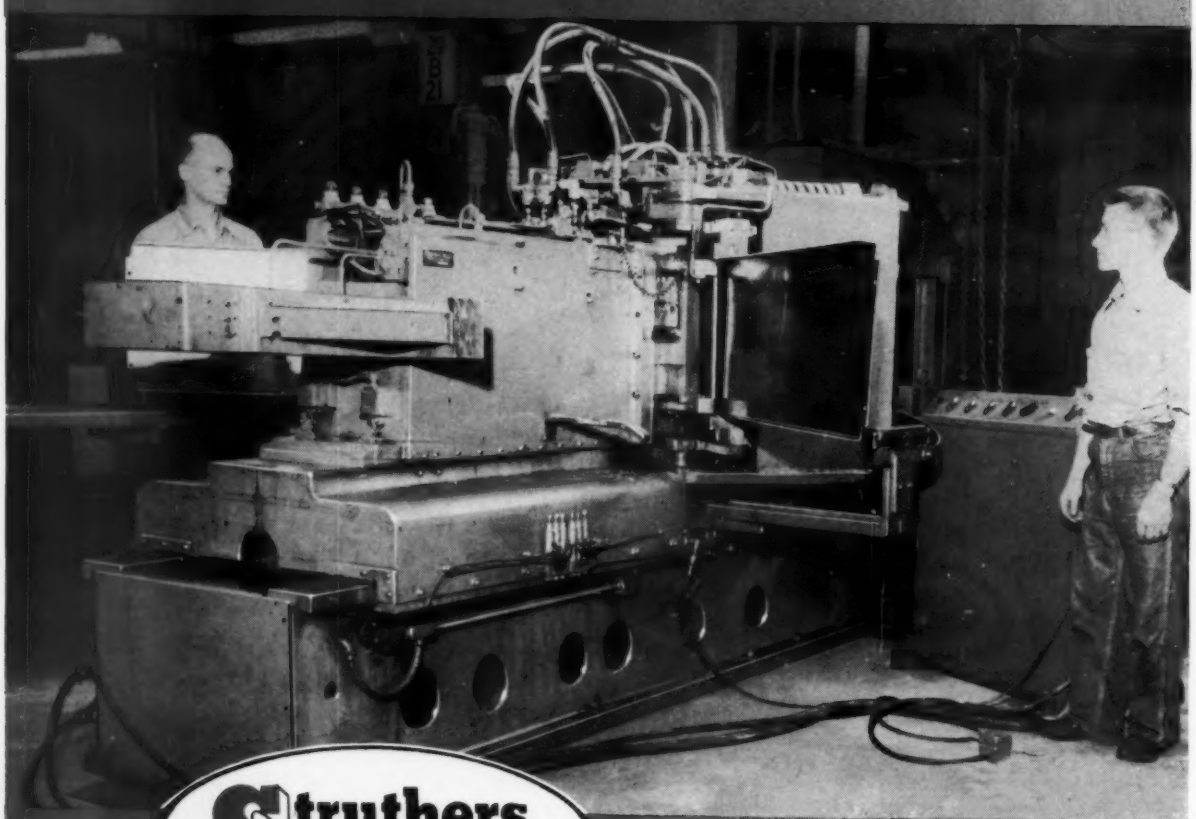
EQUIPPED WITH Telechron® MOTOR

Telechron timing motors are used in ranges, clock-radios, refrigerators, air conditioners, and many other appliances. They are long-lived, low in price, noted for dependability.

Telechron®
MARK OF TIMING LEADERSHIP

For Norge DIVISION BORG-WARNER CORPORATION

—fast, Automatic Cabinet Forming in Refrigerator Production



with Struthers Wells Double Wing TANGENT BENDERS

At the Muskegon Heights, Michigan plant of NORGE Division of Borg-Warner Corporation, rapid and efficient forming of refrigerator cabinet wrap-arounds is provided by Struthers Wells Tangent Benders. These modern machines radially edge-bend the pre-formed, flanged sheets into cabinet form in one smooth operation—completely automatic except for loading. • Write for our descriptive Tangent Bender Brochure—let us consult on your needs.

MACHINERY DIVISION

STRUTHERS WELLS CORPORATION

Titusville, Pa.

Offices in Principal Cities

Manufacturing and engineering . . .

by Virgil C. Rice • VICE PRESIDENT OF MANUFACTURING AND ENGINEERING

Exclusive feature finish

What kind of stress do you put on the manufacturing-engineering team when you double your business?

It boils down to this: You adjust to the increased demands.

We didn't have time at Effingham to build a new plant. We had to start production of electric clothes dryers, making them in a plant that was producing a normal quota of gas and electric ranges. We had to complete a retooling program valued at $1,325,000. Installation of the giant presses forced us, literally, to cut holes in the roof.

In May, 1954, we employed 500 people on one shift at the Effiingham plant. Today we employ upwards of 1,200 on two shifts. Almost five times as many clothes dryers currently are produced each day as were produced daily eight months ago. Gas and electric ranges roll off the production line in quantity, and built-in ranges are starting to come from the assembly conveyors.

At Muskegon, we are spending $500,000 for additional facilities for the manufacture of refrigerators.

But the lot of the appliance manufacturing engineer these days is not confined to problems of the factory area. Housewives demand more of appliances than ever before. Work saving is as much a part of the kitchen range as the conveyor on the production line.

From consumers there is an increasing demand for more labor-saving features in appliances. Our industry has just started to make the improvements that will satisfy the housewife.

As one example, our 1955 range has the three-way griddle top which converts quickly to any of three cooking arrangements. This griddle is left in place for all-purpose frying, covered with the "touch-and-lift" porcelain cover for a work surface, or replaced by the "bonus burner" tray and grate to provide a five burner top.

Another new feature is an automatic, fully adjustable lamp. In one motion the gleaming chrome-plated Adjust-A-Lite can be swung up or down, rotated backward or forward, flooding the cooking top with light wherever it's needed most.

Our manufacturing strategy is bulwarked by the assistance of Borg-Warner Corporation, which has built a reputation for outstanding products in many fields. Norge has available the vast Borg-Warner research facilities. Both groups work cooperatively on items that eventually become innovations on appliances.

Other practices we adhere to include:

(1) Close coordination between the engineering and purchasing departments.

(2) Close cooperation between the purchasing department and suppliers.

These policies have served us in good stead as we steadily increased our manufacturing and engineering speed. We did not have to worry about basic policies and could concentrate on the refinements we needed to get fast production.

In the automatic gas and electric clothes dryer, we have proof that a new product can be engineered and produced in minimum time without sacrificing quality — if engineering and production work as a team to do the job. The consumer was demanding a clothes dryer that could operate on household current — and sell at a reasonable price. Our job was to answer this demand with the shortest possible time schedule.

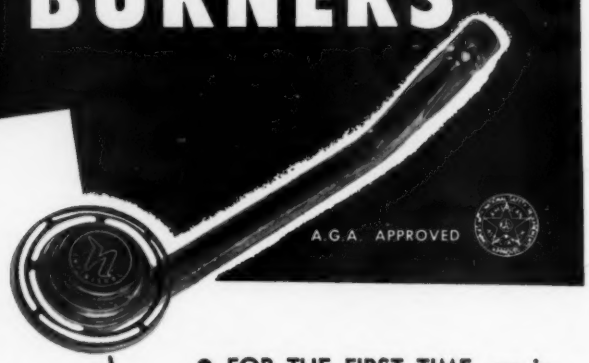
The clothes dryer is not an isolated example. Right now there are at least two other appliances in the same position. We approach their manufacture with the same plan of close cooperation between engineering and production.

The three Norge manufacturing plants operate independently under individual plant management. Although they operate as autonomous units, there is complete interchange of information on engineering and manufacturing operations, so that each may benefit from the most advanced developments.

PATROL VALVE COMPANY'S CONTRIBUTION TO **NORGE QUALITY**

the amazing

INFINITROL BURNERS



NOW FROM NORGE . . .

THE WORLD'S MOST EFFICIENT GAS BURNER!

AMAZING NEW INFINITROL ON 1955 NORGE GAS RANGES HAS LIFETIME WARRANTY, LIMITLESS CHOICE OF COOKING HEATS

Now NORGE introduces the most efficient, even-heating gas surface burner ever made . . . with a lifetime warranty to go along with it.

The new NORGE INFINITROL unit utilizes more heat from the fuel, provides faster, further cooking. Press-and-turn controls ignite burners automatically—click-stops give you uniform heat every time! It's the start of a whole new era in cooking!

Adjust-A-Lite—3-Way *Griddle Top*—*Vis-Matic Clock Timer*—*Balanced-Heat Double Ovens*—*Hi-Speed Broiler.*

The 1955 NORGE Gas Range is literally years ahead in styling and cooking convenience—an appliance that will take its place with the famous NORGE AUTOMATIC WASHER in glamour and functional perfection!

Don't Wait Too Long—Better Check On That NORGE FRANCHISE!

NORGE MEANS BUSINESS . . .

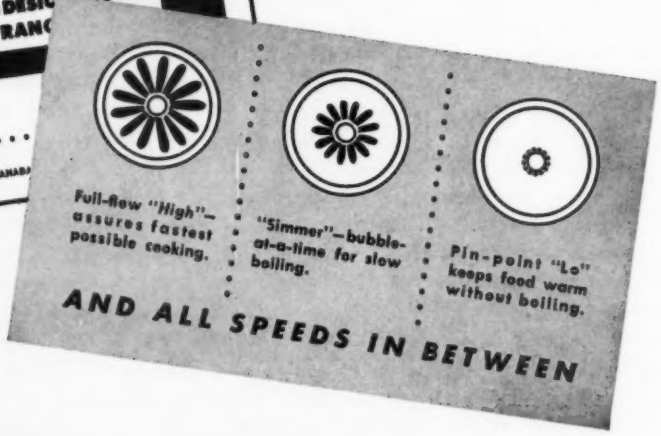
DIVISION OF BORG-WARNER • MERCHANDISE MART, CHICAGO 54 • IN CANADA

MODEL G-341

NEW 1955 "LIVING DESIG[N]" NORGE GAS RANG[E]

- FOR THE FIRST TIME, an instant choice of any of an infinite number of cooking heats . . . *ALL FROM A SINGLE, THRIFTY BURNER!*

- The exceptionally light weight INFINITROL is as easy to clean as a saucer . . . has no drilled ports to clog! This revolutionary burner operates efficiently on all commercial gases *without alteration.*


Full-flow "High"—assures fastest possible cooking.
"Simmer"—bubble-at-a-time for slow boiling.
Pin-point "Lo" keeps food warm without boiling.
AND ALL SPEEDS IN BETWEEN

A-284

Write for full information

THE "PATROL"® VALVE COMPANY

2310 Superior Avenue • Cleveland 14, Ohio

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Confidence must be earned . . . and to earn it, worthiness must be demonstrated. This holds true for individuals, organizations and products.

Pemco People and Pemco Products demonstrate daily their value to the industry. That's why so many users of Pemco Products say —"I have every confidence in Pemco."

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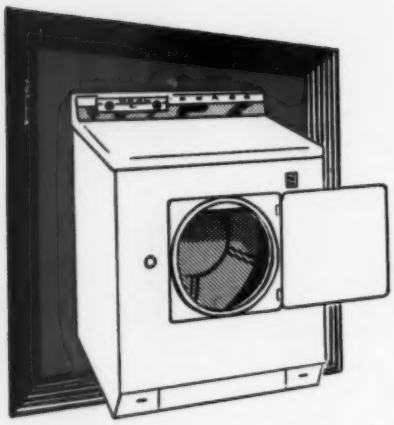
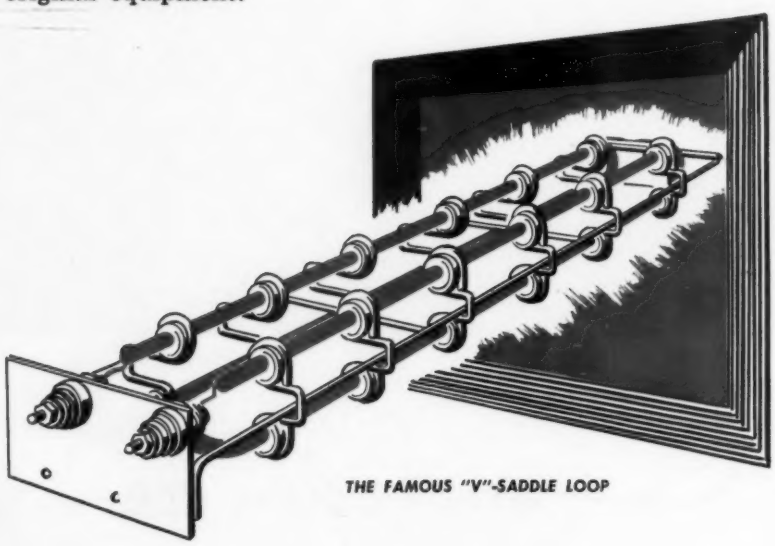


Contributing to
modern living and bringing
new happiness into
the lives of homemakers
throughout America . . .
NORGE Clothes Dryers
are meeting with popular
acclaim . . . everywhere!

With modest pride,
we are happy that **NORGE**
. . . an acknowledged leading *name*
brand in the appliance field . . . selects
NYKELKROM heating elements as
original equipment.



THE FAMOUS "V"-SADDLE LOOP

FOR QUALITY

H. W. Tuttle & Co.

ADRIAN, MICHIGAN

Manufactured and distributed in Canada by Macdonald Metals & Plastics, Ltd., Waterloo, Quebec

Marketing and sales . . .

by R. C. Connell • VICE PRESIDENT OF SALES

Exclusive feature finish

The appliance industry is about to crack another sales barrier, the roadblock that has been holding back widespread sales of automatic clothes dryers. History will repeat itself. We predict that the $149.95 clothes dryer will open up the dryer business in much the same way that the first low-cost refrigerator unlocked the refrigerator business approximately 25 years ago.

The marketing signs denoting this are everywhere. In December 1954 no less than 58 dealers in Detroit tied in with a factory newspaper advertisement about dryers. All during the same month our orders for electric clothes dryers were backlogged three weeks and factory sales were 200 per cent ahead of 1953. Industry figures also are at an all-time high with no sign of falling back.

Boom expansion of this dryer market is definitely one of the keystones of our marketing program at Norge. We decided this when we were able to develop a clothes dryer which provided two features previously unavailable: low initial cost, and operation on regular 110-volt household current (elimination of expensive installation). Here is a market which is less than 10 per cent saturated.

Increased percentages for other Norge appliances are also major marketing objectives. We are out to increase our take of total industry sales in refrigerators, automatic washers, water heaters, and ranges. Conventional washers also will continue to receive their share of our expanded merchandising activity.

Early in 1954 our marketing problems were similar to those facing others in the appliance industry. Sales were fair. But Norge products were not sold within reach of the large percentage of the public. Stores in shopping areas serving millions of families did not handle our line. Thus national advertising was expensive and often wasteful. Economies of mass production could not always be obtained because we did not sell in quantity at the retail level.

Before an appliance marketing program can operate effectively there must be good dealer coverage. We took two measures to achieve this result.

A new dealer development department and market studies

First we formed a dealer development department to give direct sales and promotional aid to retail appliance stores. This department develops national promotions as well as local promotions tailored for specific markets and local conditions, dealer sales training, and store management aid.

This department has proved to be of direct, effective aid to dealers, and of tremendous assistance in building our dealer organization. A successful Christmas promotion — one dealer sold 12 appliances on the first day he used it — came from this department.

Along with this vigorous dealer aid we soon embarked on a new way of analyzing sales territories—county by county and city by city.

We spent six weeks and $75,000 to gather exhaustive data about all the marketing areas in the country. Armed with this information, our field men met with each distributor and worked out selective coverage based on the type, kind and number of dealers who should be handling Norge products.

During October, Norge distributors appointed 1,200 Norge dealers, a new record for a single month. We believe that this one fact indicates that our marketing measures are gaining a foothold.

Of equal significance is our upsurge of sales. Not only dryers but all down the line sales figures top those of 1953. Automatic washer sales during December represented 305 per cent of those in the corresponding period of 1953, gas dryers 298 per cent, electric ranges 178 per cent, freezers 179 per cent, electric water heaters 167 per cent, refrigerators 153 per cent, conventional washers 128 per cent, and gas ranges 126 per cent.

With the dryer as the bellwether, we intend to keep these measures in force as marketing principles to use with all time-proved appliance industry techniques.

The "Ferro Family" Salutes

NORGE

on its great drive forward!

Nineteen fifty-five will be a big year for the appliance industry . . . and Norge is moving out to make it a *great* year for Norge dealers.

Ferro, too, is in the appliance business—long-time "silent partners" of the industry in the building of ever-better products for you to sell.

Ferro is proud to have a part in the new Norge line for '55. And we're doing *our part* to help you sell. The *ball* is yours! Take it . . . and *GO!*

FERRO

FERRO CORPORATION

Developers of today's finer Porcelain enamels

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TUTTLE & KIFT, INC.
"Monotube" Surface Units
CHICAGO 39, ILL.

FERROD MFG. CO.
Rod-type (Oven) Elements
BATAVIA, ILL.

FERRO ELECTRIC PRODUCTS, INC.
Open-type (Dryer) Units
KIRKLAND, ILL.

A trip through the NORGE Effingham plant

including an illustrated description of fabrication, metal preparation, finishing, assembly, packaging and shipping and materials handling

illustrated with finishfotos

by Jack Elmore • VICE PRESIDENT AND GENERAL MANAGER; AS TOLD TO *Dana Chase,* EDITOR OF FINISH

finish exclusive feature

Ranges and clothes dryers in both gas and electric models are products of the Norge Effingham, Ill., plant. The current production level on these products is approximately 20,000 units per month.

Norge purchased and began operations in its Effingham plant during the latter part of 1945. At that time, the plant consisted of approximately 150,000 square feet. Since then, 146,000 square feet of floor space have been added, together with several million dollars worth of fabricating and production equipment. The plant is laid out to feed major fabricated and finished components to three parallel assembly lines, one for gas ranges, one for electric ranges, and one for clothes dryers. Sub-assembly of many smaller components is completed on belt conveyor lines located near and feeding direct to the assembly conveyors.

Steel receiving and storage

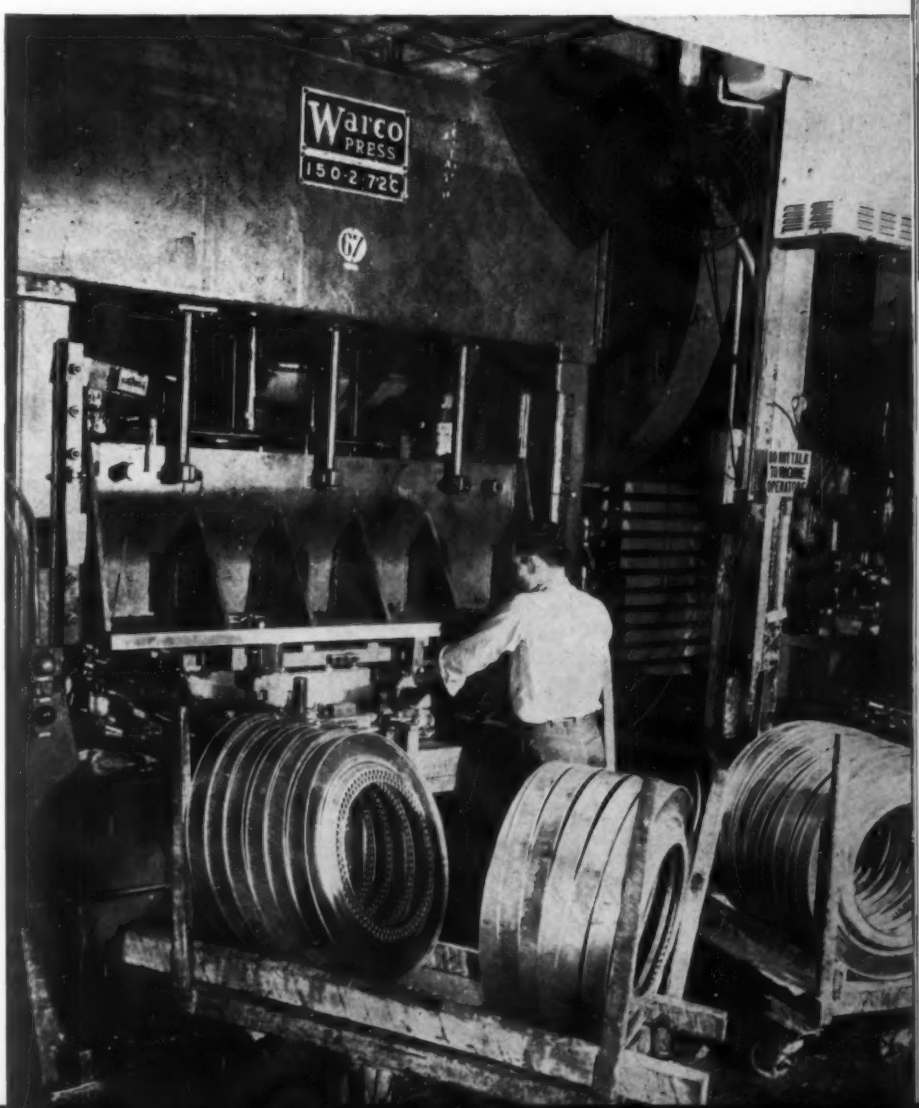
Steel sheets are brought into the plant by gondola cars or flat-bed trucks. The sheets are purchased in 10,000-pound bundles and in sizes that best fit the required blanks for fabricated stampings used in the manufacture of Norge ranges and dryers.

A portable crane car is used to unload these sheet steel bundles from the cars or trucks and transport them to the sheet steel storage area. This crane car also transports the steel bundles to the shear department for the shearing operation. The sheared blanks are then moved to the various press operations by fork lift trucks capable of handling three-ton loads.

The plant uses 2,000 tons of steel per month, including cold rolled, hot rolled and vitreous enameling stock.

A tool room covering an area of about 3500 square feet and employing 18 men on a three-shift basis is maintained to build and repair dies, jigs and fixtures which are used on presses, machine tools and assembly operations in the plant.

If a major retooling program is required for new designs, tools and dies are purchased from companies specializing in this work. →



The die set-up in this press punches 144 holes around the inside of the dryer cylinder front—with 12 holes punched per hit.

View of a section of the shearing line where incoming steel is sheared to size for subsequent operations.

Steel sheets to be subjected to drawing are coated with dry drawing compound by immersion in hot solution.

FABRICATION

All drawing, stamping and welding operations for the ranges and dryers are handled at Effingham with the exception of the main top for the ranges and the many finished or semi-finished components which are normally purchased outside by all appliance manufacturers.

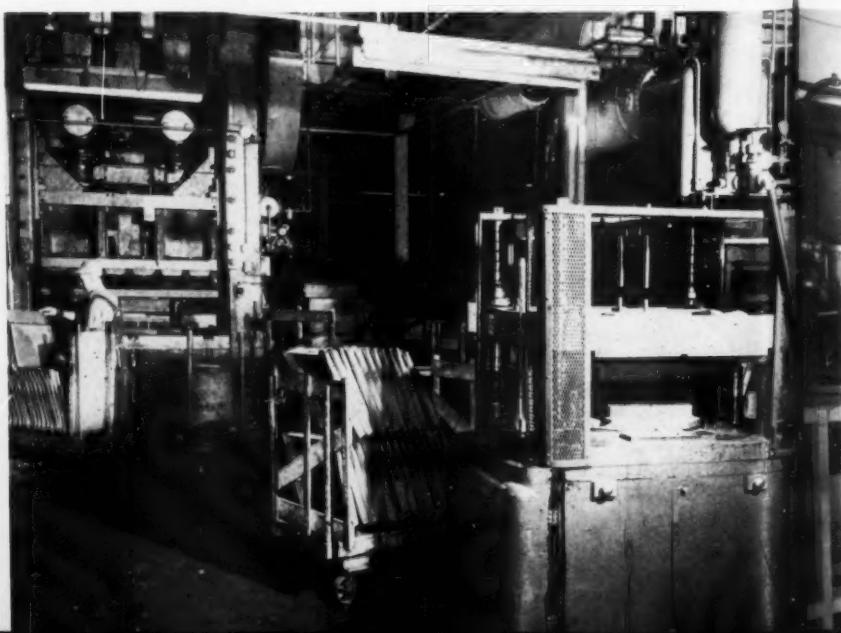
Press department

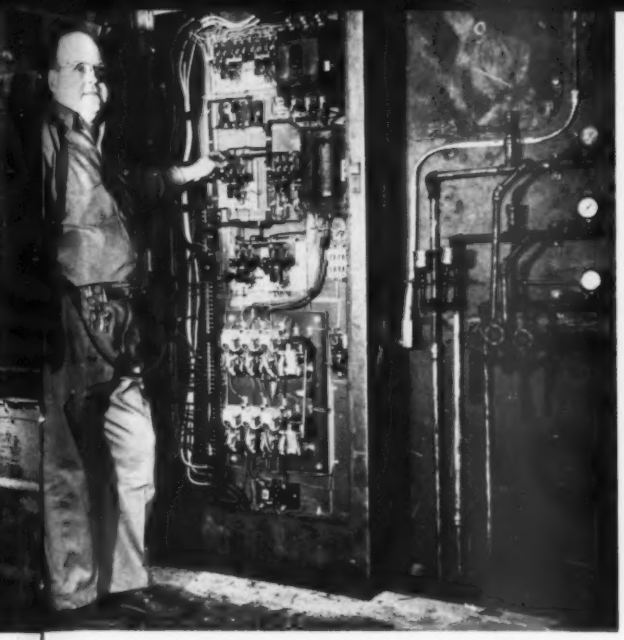
In this department there are seven power shears ranging in size from 3½ feet to ten feet and up to 3/16-inch steel capacity. There are 57 presses ranging in capacity from ten tons to 450 tons and having bed areas to fit all types of dies for making the hundreds of kinds of stampings that are required in the manufacture of ranges and dryers. Almost 1500 dies are required to manufacture the 20-inch, 30-inch and 36-inch gas and electric models. Another 410 dies are required for the clothes dryer. Approximately 820 dies are required for the 41-inch range.

All dies are stored adjacent to the press room in large steel racks. These racks are designed so that the dies can be removed by fork lift trucks. Due to the fact that most of the presses are used for multiple operations, orders for required parts are given the press room by the production department. The foreman then schedules the various presses and the dies to produce these parts. The dies

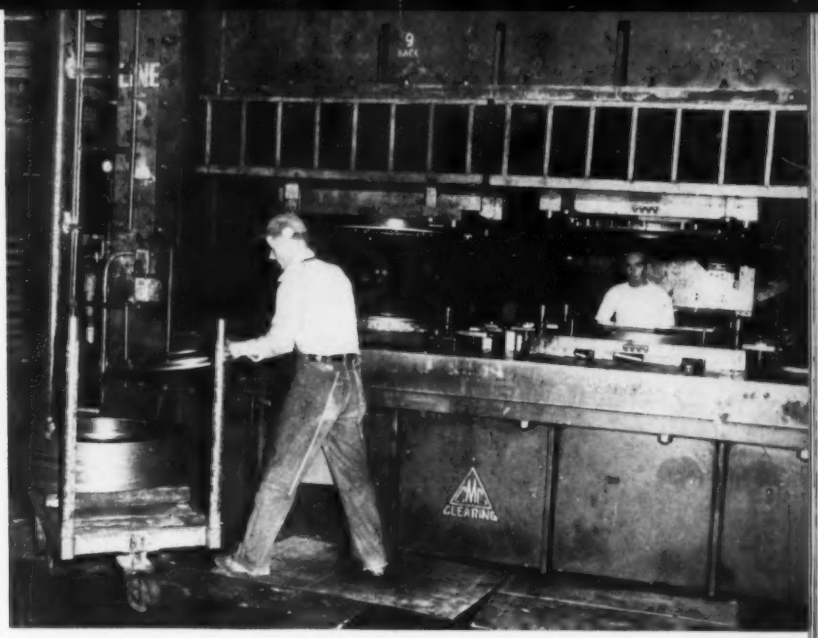
Left: In this welding operation, the right and left hand support brackets and front flange are welded to the range top.

Below: In left background, a 400-ton press is forming the oven door panel for ranges; right foreground shows a machine for trimming drawn flanges.





Panel box containing electrical controls for 350-ton press—one of three new presses installed in plant.



Blower covers for dryers are formed in this 350-ton press. First die blanks and pierces; second die forms.

are then set and a sample is submitted to inspection for approval before the production operators are assigned to the presses.

The presses are so situated that the operations for the various stampings are normally in straight line production. Fabricated parts are then moved to a large storage area where they are held for further processing.

Dry drawing compound used

All sheared blanks used for deep drawn or hard-to-form parts are subjected to the application of dry drawing compound. The blanks are transported by overhead monorail conveyor through the tank application of the compound and then through a tank drier. This material has been found to prevent tearing and breaking of the metal during the drawing of the more difficult parts and to keep the dies and tools in a clean and polished condition. The compound also serves to prevent rusting of fabricated parts during storage.

Following are two typical examples of sequence of operations on fabricated parts.

Range Front Panel
(upper right hand — plain)

Sequence of operations:

1. Shear blank (sides)
2. Shear blank (ends)
3. Apply dry drawing compound
4. Pre-draw face (first draw 5/8-inch)
5. Final draw
6. Trim and pierce handle holds on 250-ton punch press
7. Wipe up outside (This is another die set in the same press used for No. 6.)
8. Notch top corners (45-ton press)
9. Notch lower edge
10. Lance and form tabs on bottom
11. Return side flanges to complete part (four dies in one 175-ton press)

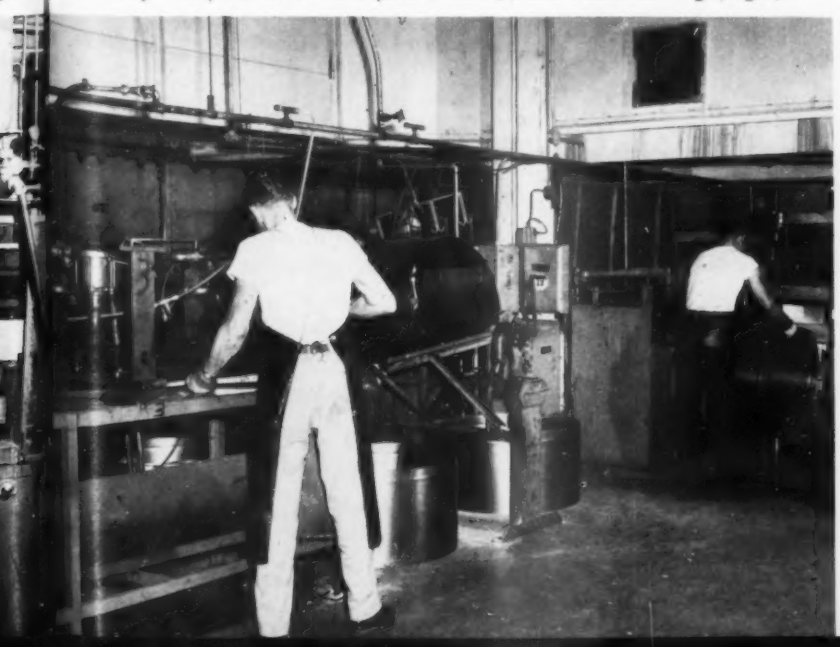
Electric Clothes Dryer Top

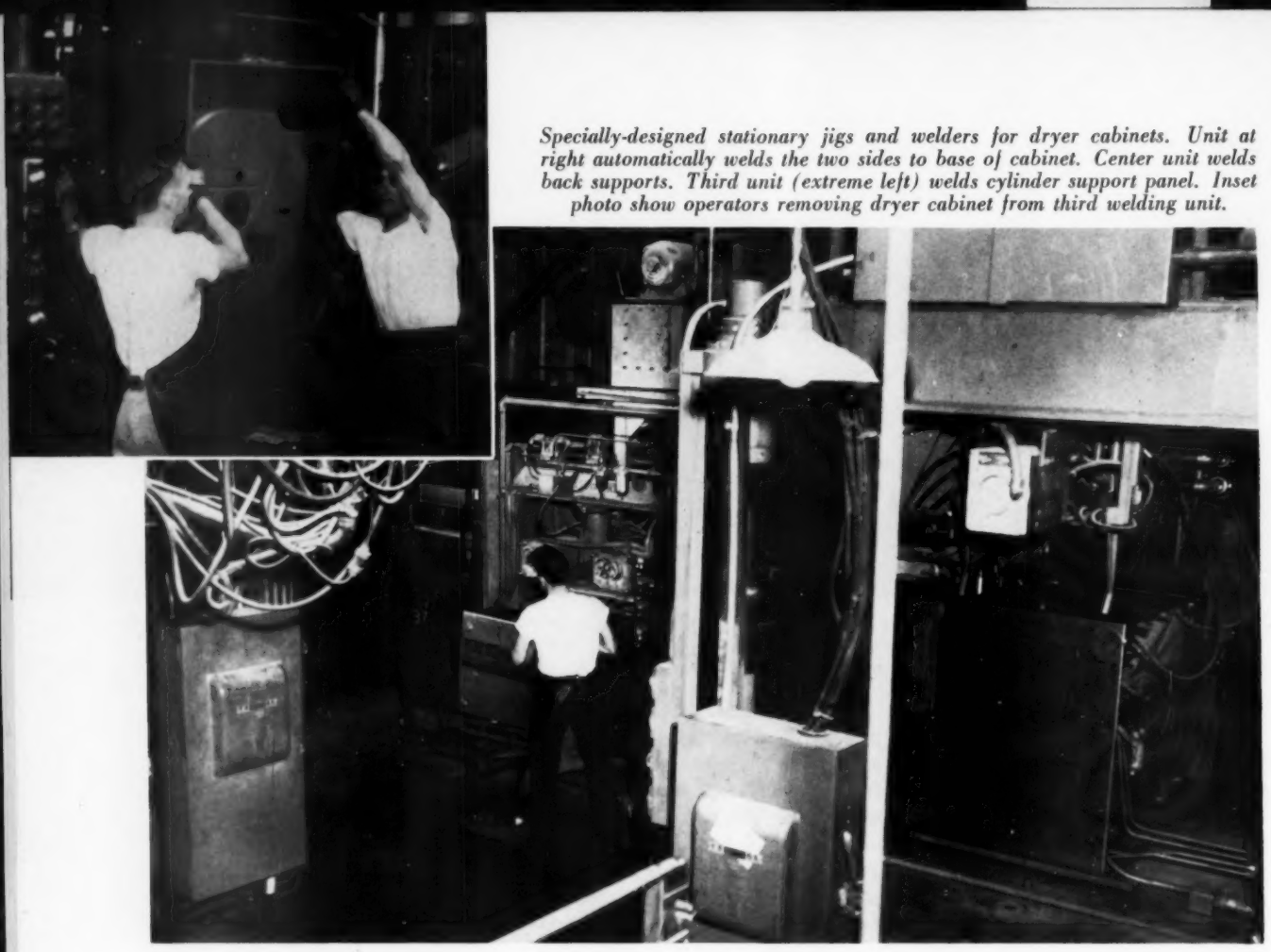
Sequence of operations:

1. Shear steel sheet to size

Right: Inspection point for automatic washer tops which are later porcelain enameled, and then shipped to Norge's washer plant in Herrin, Illinois.

Below: Hydro-press operation (left) for piercing sheet for dryer cylinder, followed by roll form with hand feed (center), and seam welding (right).





Specially-designed stationary jigs and welders for dryer cabinets. Unit at right automatically welds the two sides to base of cabinet. Center unit welds back supports. Third unit (extreme left) welds cylinder support panel. Inset photo show operators removing dryer cabinet from third welding unit.

2. Apply dry drawing compound
3. Press draw and pierce two holes in 400-ton press (Four corners are annealed in portable equipment which is placed in front of the press for this operation. Anneal follows draw.)
4. Trim, pierce and extrude two holes
5. Redraw on 150-ton press
6. Return four flanges on 250-ton press (air-cam)
7. Pierce five holes in back flange

Multiple die sets and single presses are used wherever possible and the trend, when adding press equipment, has been to select equipment with a view to multiple die operations.

Welding department

The welding department includes four types of machines . . . pedestal type, rocker arm, gun welder and automatic welder. Some acetylene welding is done, largely for repair and localized annealing. Equipment includes 25 spot welding machines, 12 gun welding machines and 3 automatic welders.

Scheduling becomes more critical at this point in the plant in order to meet the demand of succeeding operations without large storage banks. The steel stampings are procured from the fabricated parts storage area and transported to the welding department for welding into sub-assemblies. They must then continue through the succeeding operation to meet required schedules.

There is careful inspection of fabricated parts preceding welding. All parts must be acceptable to inspection before they are allowed to run. Inspectors are not only responsible for the condition of parts preceding welding but they check welding machines to be sure they are producing satisfactory parts.

After welding, the parts are carefully inspected, metal finished where necessary and released for the paint or porcelain enameling departments.

Some of the specialized equipment in the welding department includes the following:

1. Special multiple spot welder—12 guns, 6 in sequence, for oven liner seams

2. Eleven hydraulic booster gun units for main tops and oven back lining and frames

3. Specially designed stationary jigs and welders with hydraulic boosters for dryer bodies.

Operation of the welders listed under No. 3 is as follows:

First station — There are 24 guns, 12 in sequence, ejecting vertically.

Second station — There are 12 guns (two on each side and two at the back operating simultaneously — six in sequence). The unit ejects horizontally.

Third station — There are 21 guns. The dryer cabinet moves down to position for locators. Welder and cabinet then move up to position and lock for backup guns to come into position. Four guns on the front and four back-up guns, plus five guns at the bottom operate in first sequence. Eight guns then come in for second sequence and this releases the lock for the ejector.

Most of the welding equipment is 50 KVA. The dryer cabinet units have four 50 KVA transformers each. There is a battery of pedestal spot welders with straight up and down movements for outside panels that must be free of weld marks.

A battery of rocker arm type spot welders are used for ovens and interior parts where weld marks will not

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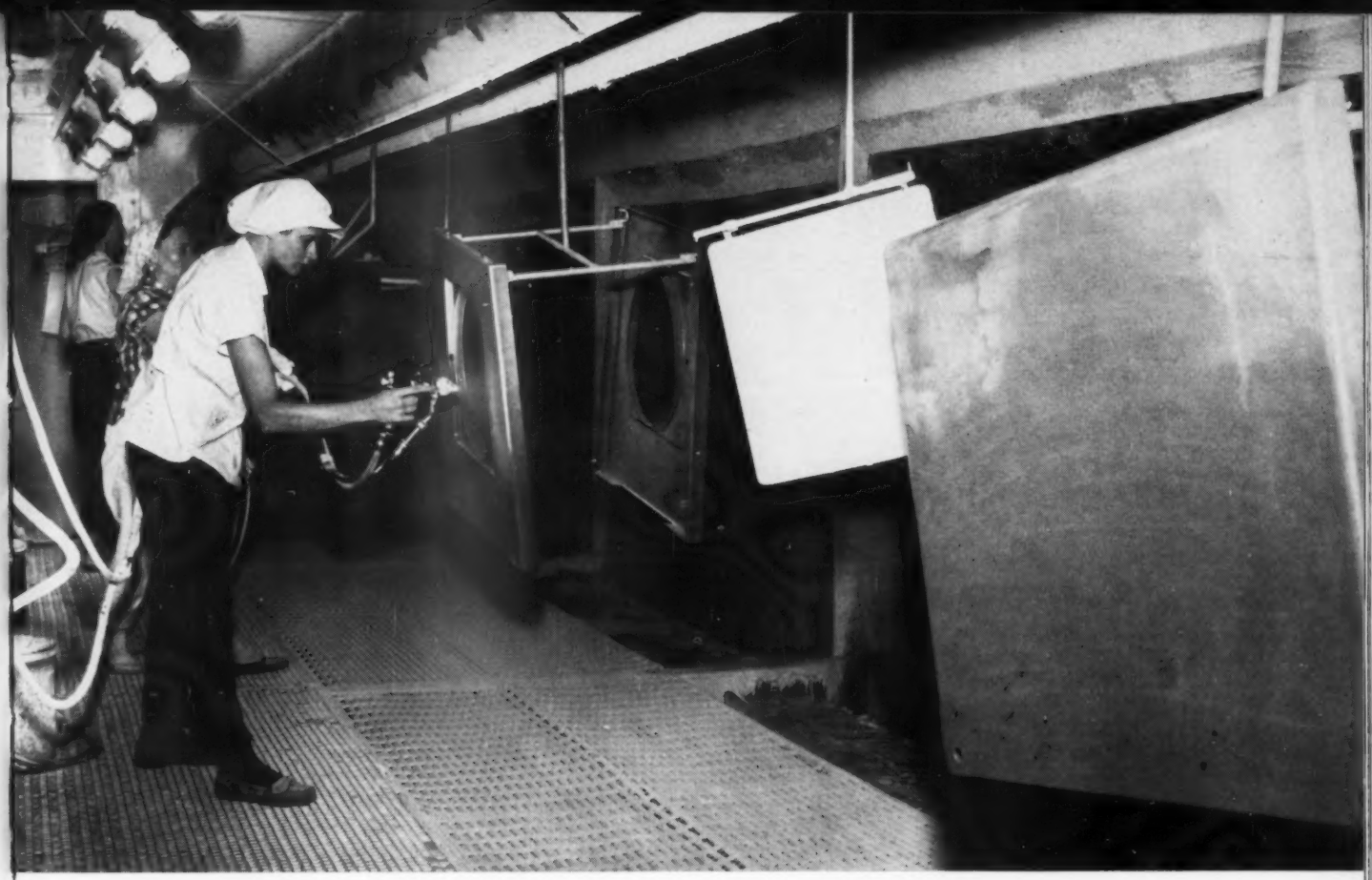

"The Dryer with No Limitations" Has a Finish with No Limitations

The new Norge "Time-Line" Clothes Dryer uses a Nubelite finish developed specially by the Glidden laboratories to meet all the Norge service requirements and finishing schedule.

Norge also uses a Glidden Nu-Pon primer to provide a performance-matched undercoat for the Nubelite finish. Flow-coat application of the Nu-Pon primer produces a uniform, economical film thickness even in areas normally unreached by spraying.

Glidden Laboratory and technical services are available to any manufacturer to help formulate beautiful long-wearing finishes and to help solve application problems.

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This gleaming white masterpiece, the Norge Refrigerator, stands supreme as today's most ultra modern kitchen appliance. Its time-saving features and distinctive beauty are all a part of vast research programs to use the best materials to produce the finest kitchen masterpiece ever made.

Hommel is proud to be a member of this team . . . Hommel frit has made a porcelain enamel interior finish that will stay gleaming white longer. Wherever real masterpieces are made, you'll find HOMMEL.

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Automatic Washer
When it comes to TUBS for the Time-Line Washer
NORGE
comes to
Ingersoll
The beautiful Norge Time-Line automatic washer is a marvel of washing efficiency. And part of that efficiency is due to the tubs. Tubs that are engineered and produced by Ingersoll to Norge's exacting specifications.
Today, many leading makers of washers come to Ingersoll for all their tub requirements. They know that Ingersoll's engineering and manufacturing experience covers the entire field of tub design. They know that Ingersoll's specialized equipment assures on-schedule production, tailored to their own individual requirements. And that Ingersoll's efficiency means high quality at economical cost.
With such skills, experience and facilities, Ingersoll can readily provide the answers to any problems you may have regarding washer tubs, porcelain enamel tops and panels. To see for yourself, consult Ingersoll—without cost or obligation.
Ingersoll
PRODUCTS DIVISION
BORG-WARNER CORPORATION
310 S. Michigan Avenue
Chicago 4, Illinois

→ *from Page N-20*

show in the finished product.

Welding Sequence for Electric Range

1. Base rail goes in jig, and right and left rails are welded separately.
2. Backs are welded from five components including two leg rails, terminal block and fuse cover.
3. Three operations on oven — (Back into oven lining, two reinforcement strips on outside and two element slides on inside).
4. Front frame unit — two operations . . . one insert (location for oven), center rail support, and a weld angle for drip pan.
5. Oven door lining — two operations . . . right and left reinforcing angles and two small reinforcements for oven door lining where handles are to be attached.
6. Front panel (oven door face) — Five spacers are welded for attaching the oven door lining. (Where windows are to be installed, a weld angle is added to the oven door frame for attaching window.)

FINISHING

PORCELAIN ENAMELING

The great majority of the parts for both gas and electric ranges are finished in this department as are tops for the automatic washers produced at the Norge Herrin plant. The fabricated parts to be porcelain enameled are loaded into alloy baskets and prepared for finishing in a 12-stage open tank cleaning and pickling installation. The ware is handled by overhead monorail, controlled individually by the operator. The exhaust system is adequate to keep the surrounding air entirely free of excess vapor and fumes.

12-Stage Metal Preparation

1. Heavy duty cleaner (8-ounce per gallon)
2. Heavy duty cleaner (8-ounce per gallon)
3. Light cleaner (2-ounce per gallon — no additions made — dumped when builds up to 7-ounce)
4. Cold water rinse (overflow)
5. Acid—hot sulphuric –140° to 160°F.
6. Acid—hot sulphuric –140° to 160°F.
7. Cold water rinse (overflow)
8. Nickel — 170°F. (¾ oz. double nickel salts per gallon)
9. Cold water rinse (overflow)
10. Neutralizer (prepared*)
11. Neutralizer
12. Covered, insulated tank dryer

Ground coat porcelain enamel is applied by both the dip and spray method. Ground coat is sprayed on back guards, main tops, end panels and door panels where drain marks are not permissible. These parts are sprayed on backs and edges manually prior to entering the automatic spray machine where the face of all parts is ground coated. Edges are then reinforced manually.

*Note: Soda ash-borax neutralizer was used here for years but it was found that a new prepared neutralizer is more effective with present enamels.

All inside parts are dipped in ground coat. Some of these then get a coat of black before firing.

Oven linings get an extra heavy white stipple over the bisque for firing with ground coat.

The ground coat conveyor is set up with two booths for hand spray followed by "turn over" station ahead of the automatic, and then with two hand spray booths following the automatic. The parts then continue through a lay-down gas-fired drier, after which they are transferred to the furnace conveyor. Ground coat is currently being fired at 1570°F. with a chain speed of 18 feet per minute.

Two automatic spray lines parallel the ground coat conveyor. The finish coat has manual booths for spraying edges ahead of the automatic. A single booth follows the automatic spray to use as required, depending on the type of part being run.

Titanium cover coats are used.

All enamel is reclaimed from water wash booths and from conveyor wash-off. Scrapings and water wash reclaim are *mixed* and then reset. No scrapings are ever loaded into mills.

All enamels go through centrifugal sieve and a minimum of two magnetic separations prior to use.

Enamels are unloaded from the mill through magnetic separator and then, when they are loaded into dip tanks or pressure tanks, they flow through a centrifugal sieve and two magnetic separators operating one above the other. Scrapings get additional separation if fired sample indicates any tendency to black specking.

Fired samples from each mill are checked for color, gloss and reflectance against master sample. A reflectometer is used and a shadow box with fluorescent lighting is used for color matches.

Fired thickness is .003 for ground coat and .009 for cover coat, or a total applied thickness of .012. Thinner coatings can be applied in the plant but the standard is set for maximum smoothness in the final finish.

As the fired parts are removed from the finish coat furnace conveyor, they are placed on a belt conveyor where they are inspected enroute to the assembly line. Parts requiring rework are transported by another belt-type conveyor to the repair department.

Current daily production in porcelain enamel includes 1200 washing machine tops, 600 dryer tops and complete sets for 400 ranges.

Highlights

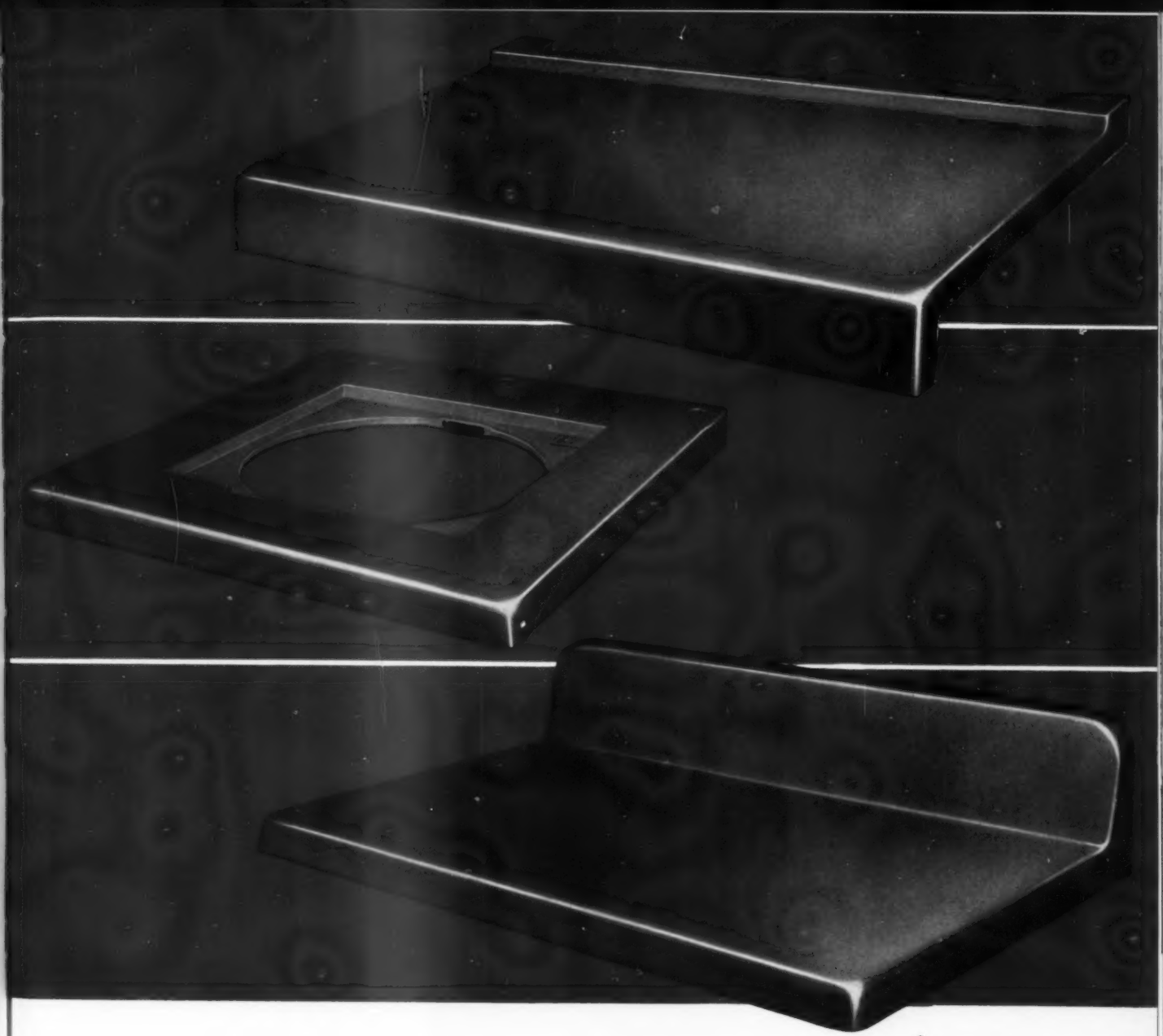
- An enclosed conveyor washer is used for removing porcelain enamel in the bisque state from scuffed or damaged ware. A circulating water pump throws 48 high pressure water sprays on all sides of the parts.
- An unusually heavy white stipple is used for oven door liners and flat parts for interiors. Flat parts are stippled by a set of three automatic guns in an open booth—the parts being carried past the guns on a monorail conveyor. Only the oven liners are stippled by hand.
- Tints are used to distinguish between types of cover coat enamels. A green tint is used for stove part cover coats; a pink tint for washer top enamels. The tinting keeps the whites separate and aids sprayers in noting coverage in the wet bisque.
- Air tools are used exclusively for brushing of holes.

ORGANIC FINISHING

While the organic finishing department is used primarily for the finishing of laundry dryer assemblies, there are some range parts in black finish and there is a small section of the plant used for the application (dipping) of aluminum paint on a burner box assembly for dryers.

Black paint department

In this department, parts are loaded onto a monorail conveyor which carries them through a metal cleaning and phosphatizing machine, then into a flow coat machine where synthetic black enamel is applied. The conveyor



Youngstown is tops at Norge

● We at Youngstown Metal Products are proud to have a part in the mass production of Norge appliances. For many years we have supplied stampings for Norge electric range tops and Norge washer cabinet tops.

Shown above are three pieces in current production: front waterfall range top, main cabinet top for the automatic washer and high back one-piece range top.

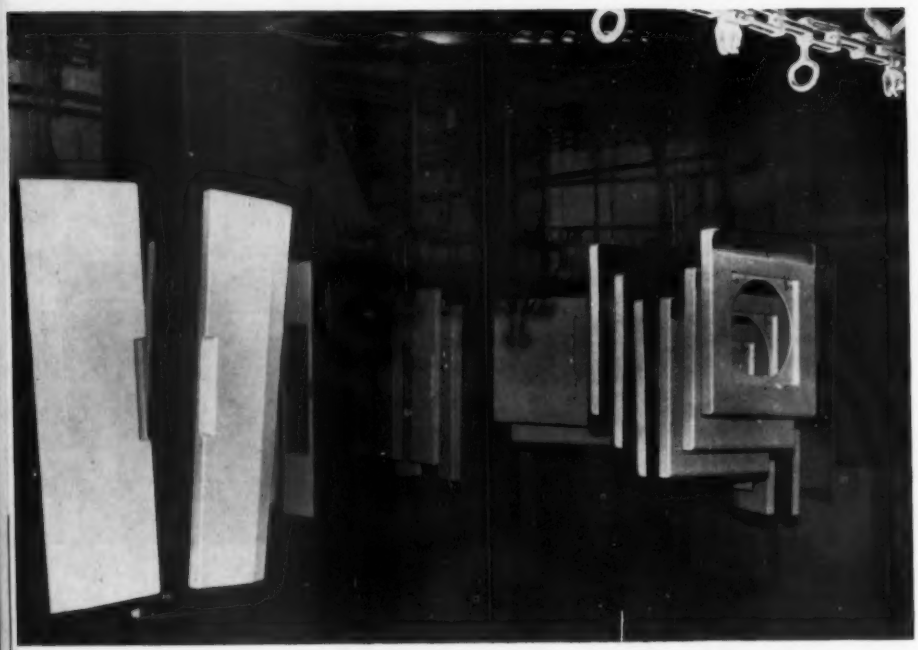
Since 1935, the Youngstown Metal Products Company has served many manufacturers as a fabricator of large stampings for home appliances and other products.

METAL YOUNGSTOWN PRODUCTS

YOUNGSTOWN METAL PRODUCTS COMPANY

YOUNGSTOWN 1, OHIO

Left: Loading end of porcelain enamel ground coat spray line conveyor which employs both hand and automatic spray. Present conveyor is to be replaced with a pin-type conveyor.



Center: Entrance and exit ends of U-type porcelain enamel furnace showing cover coat ware being fired. Both cover and ground coat stove parts and washer tops are fired in same furnace.

Left: Inspection conveyor in center with porcelain "standards" display board. Ware in left background is hanging from furnace conveyor. Other belt conveyors, such as in foreground, transport inspected parts to next operation.

then transports the painted ware through a drying oven on the roof of the building and returns the ware to a point where it is unloaded for use on the assembly line.

Laundry dryer finishes

As the principal sub-assemblies for the laundry dryer leave the fabricating department, they are hung directly onto a continuous overhead paint conveyor.

The painting system is very compact and employs on-the-roof ovens to minimize the requirement for plant floor space. The three gas-fired ovens on the roof for this paint system are:

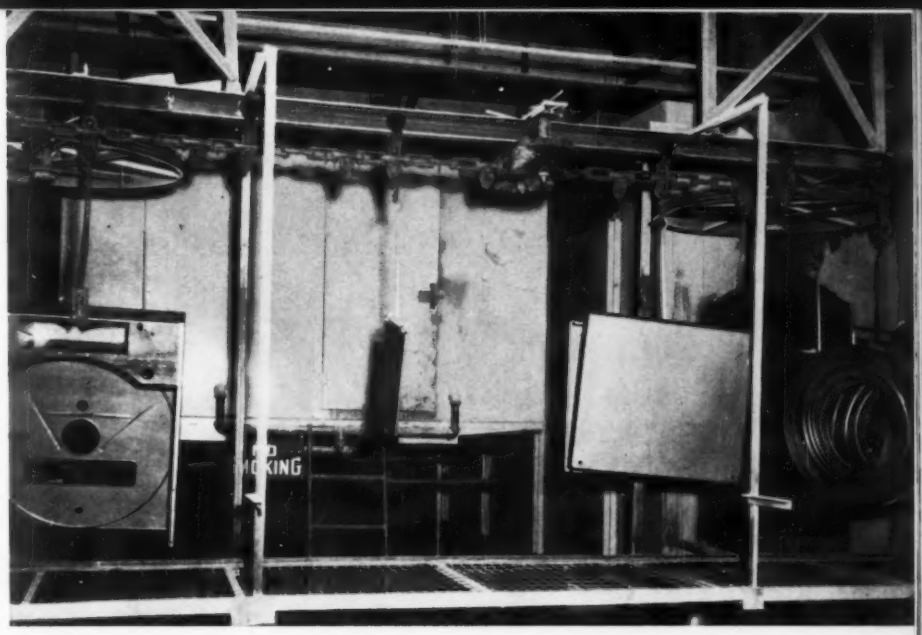
1. Dry-off
2. Primer
3. Cover coat

Metal preparation consists of a five-stage cleaning and phosphatizing machine:

1. Alkali cleaner—1.8 ounces per gallon, 180°F. for ¾ minutes
2. Hot water rinse—150°F., ½ minute
3. Phosphatizing—1.5 solution, 180°F., ¾ minutes
4. Hot water rinse—150°F., ½ minute
5. Chromic acid—180°F., ¾ minutes, .08 free acid

Following the chromic acid rinse, the assemblies travel through an automatic blow-off, then through a dry-off oven, following which they return to floor level. A space is pro-

Right: Dryer parts entering 5-stage cleaning and phosphatizing machine. After chromic acid rinse, the assemblies travel through an automatic blow-off, then through a dry-off oven on the roof.



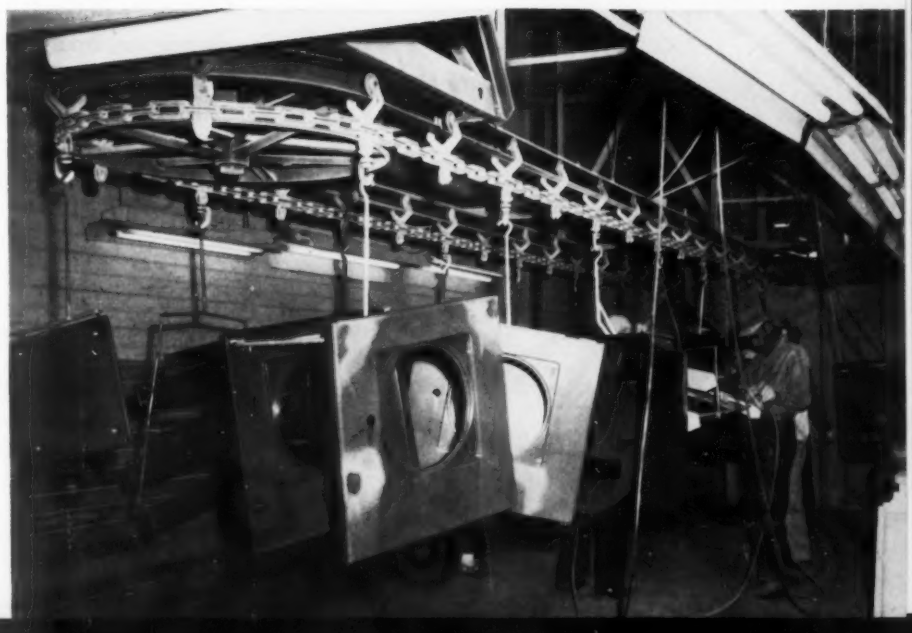
vided here for removal of any small amounts of pocketed liquid by compressed air.

The parts are now ready to enter the elevated flow coat machine for the application of the first or base coat. The material is applied in a 12-foot flow coat chamber in less than ½ minute. (Chain travels 27 feet per minute.) Parts then travel through a vapor-rich chamber, 148 feet long, allowing ample time for the paint to flow out on the surface of the parts. (Vapor is trapped by a change in elevation in the conveyor line.) The conveyor that carries this ware through the first coating process is 2900 feet long. The ware is carried from the flow coater and drain chamber out to the oven where the Epon-type finish is baked.

Interior parts, such as the drum, cylinder, back and front air ducts, dryer racks, etc., get two coats of the Epon-type finish. Therefore, after the first coat is baked and inspection completed, they are returned to the chain for second application.

Parts that get finished white are transferred to a white line and returned to ground level. Here a conveyor loop is provided for inspection, sanding and, just prior to entering the spray booth, tack rag cleaning. At this point, exterior cabinet, doors, tops (for painted models), front panels, etc., enter a 40-foot pressurized water wash booth. From the cover

to Page N-35 →



Center: Hand blow-off for entrapped liquid in phosphatized dryer parts. In background, parts are entering flow coat machine for application of Epon-type organic finish. Conveyor that carries the ware is 2900 ft. long.

Right: Inspection and sanding of prime coat ware prior to application of finish coat to dryer parts. At extreme right, conveyor is shown entering pressurized spray booth for application of finish coat.

ACME *Castings*

THE NORGE AUTOMATIC WASHER

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Norge engineering requirements are rigid. Acme has the engineering background and the foundry production facilities capable of meeting these requirements.

Acme of Chicago also offers a complete casting service including aluminum alloy permanent mold and semi-permanent mold castings and aluminum and magnesium alloy sand castings.

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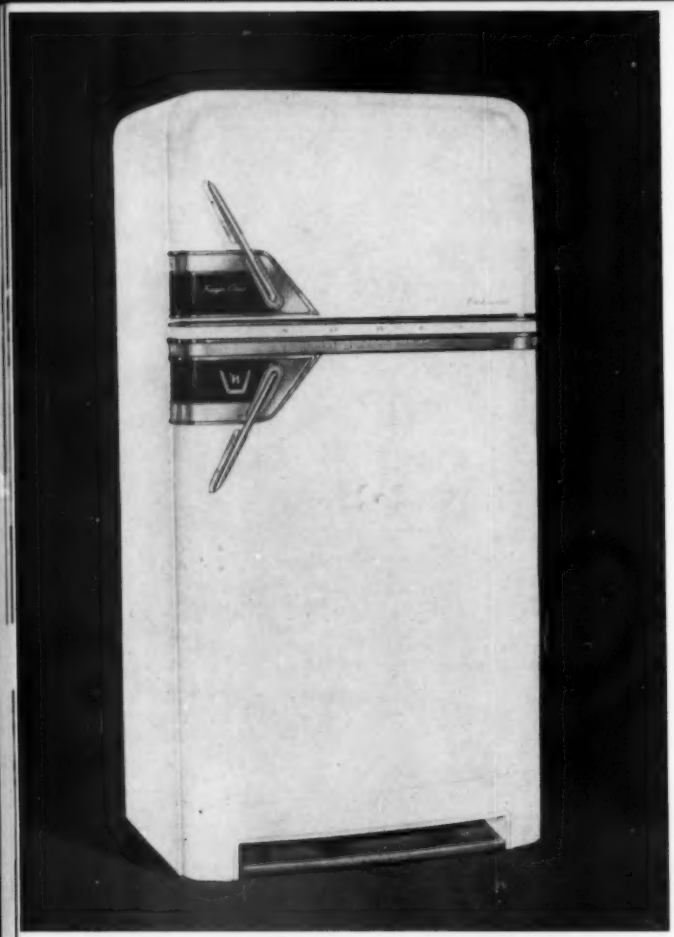
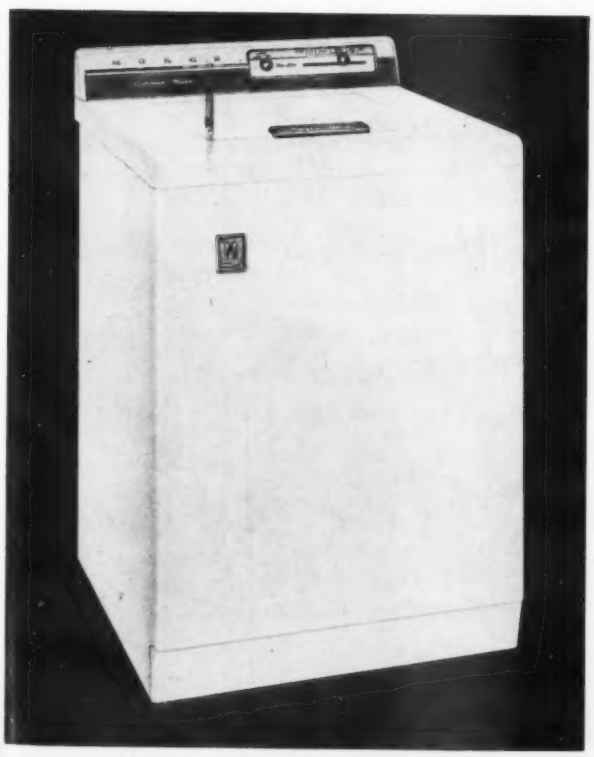


MODEL 13-124 TWO DOOR FREEZER-REFRIGERATOR

NORGE for 1955

Right: MODEL G-341 RANGE

MODEL VF-1255 FREEZER



MODEL AW-450 AUTOMATIC WASHER

MODEL AE-620 AUTOMATIC DRYER

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they are made of seamless aluminum tubing
brazed to aluminum sheet.

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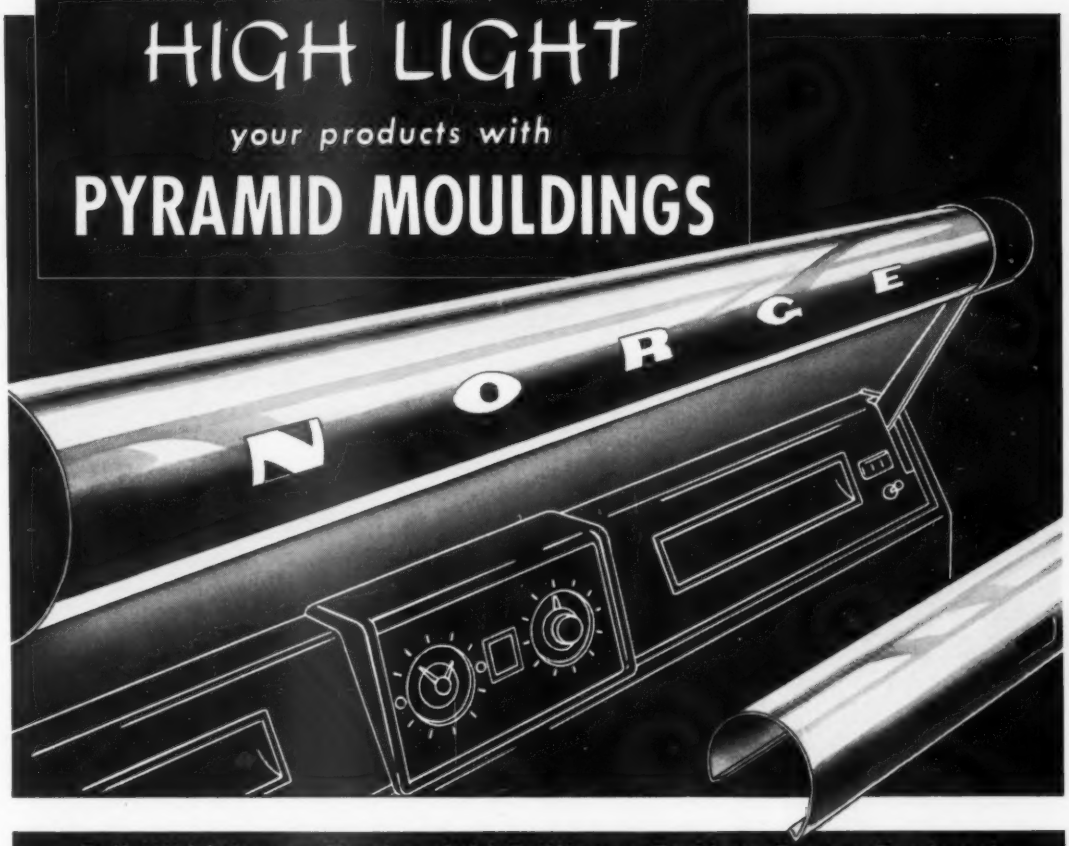
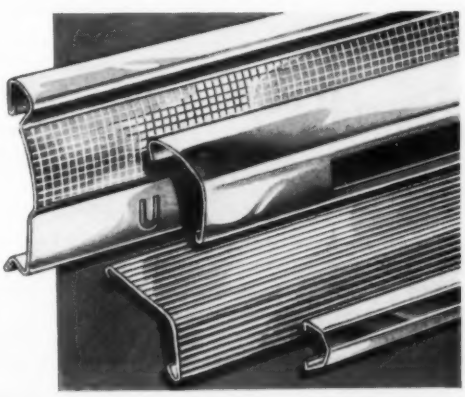


***Full-Width* Lamp Shades Add Brilliance To New Range Designs!**

Todays trend to *full-width* lighting in range design offers opportunity to add sparkle to appearance—whether lamps are off or on! The Norge shade shown above typifies this added appeal—mirror bright to catch the eye, with product name attractively identified!

This is but one of many sales-stimulating examples of roll-formed trim by Pyramid, designed to step up sales and bring down cost! Others, currently used by major producers, are shown at the right. You, too, can add to the saleability of your product with roll-formed mouldings by Pyramid. And, at the same time, you can save production headaches – for Pyramid plants are *completely* equipped to serve your every trim need. Write today for *your* copy of the Pyramid Plan Book of Metal Mouldings.



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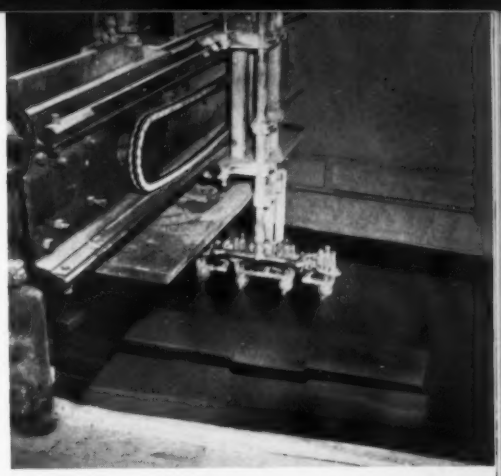
Right: Interior view of automatic spray machine. The unit is used for application of porcelain enamel cover coat to flat ware for ranges. →



Left: View inside pressurized spray booth where synthetic enamel finish coat is applied over Epon-type prime coat. Thickness of base coat is .0003 —finish coat .0015—for a combined thickness of 1.8 mils. ←

Right: Interior of conveyor washer which employs pump and forced sprays for removal of dried enamel where ware has been damaged in process. →

coat spray booth, the conveyor carries the ware to the on-the-roof oven for baking at 350°F. for 19 minutes. The parts then return to a second floor inspection station where they get 100 per cent inspection for coating defects and color.

The white synthetic enamel is applied at .0015 thickness over the Epon-type base coat for a total baked thickness of .0018.

The paint is purchased on specification both as to material specs and performance tests. Physical tests include humidity, salt spray, ball impact, mandrel bend test and abrasion test.

The paint mixing room has four 150-gallon mixing tanks. All delivery to booths is through closed line. Pressure, viscosity and all paint controls are handled in the mixing room. An overhead crane is provided for handling drums so that one man can handle the entire operation of the paint mixing room.

All finished ware is transferred from final inspection to a bank conveyor which serves the assembly line.

ASSEMBLY

Three parallel main assembly lines are provided, one each for electric and gas ranges and a third for laundry dryers. These are motorized continuous conveyors of the lay-down, wood-slat type.

The material for the construction of the finished products is moved into position on each side of these assembly conveyors. Sub-assembly operations are performed on belt-type subassembly conveyors located at the point of introduction to the main assembly. Final inspection, cleaning, operation tests, interior packaging and crating are all handled on the main lines. Inspection stations are located at appropriate points along the assembly lines and final inspection immediately precedes crating stations.

Typical gas range assembly operations

The nucleus of the gas range assembly is the oven body. The first assembly operation adds the front frame, followed by the right and left base rails. A blanket of fiber glass insulation is placed over the oven back to which is attached the back frame.

Next, the shipping crate base is attached and the inner oven door and four oven drawer channels (with nylon rollers) are added. Blanket insulation is wrapped around the oven. Following operations add the liner between oven and storage space and the top inner liner, gas line and burner assemblies, and right and left outer panels.

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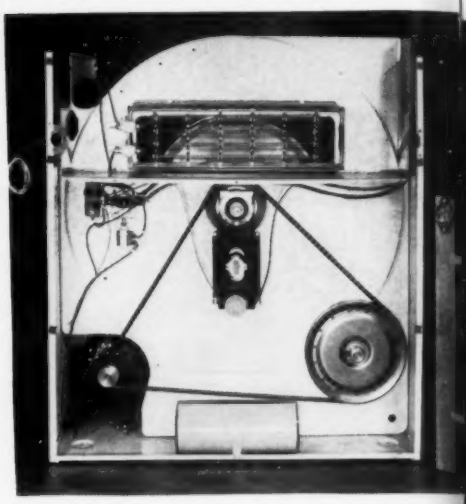
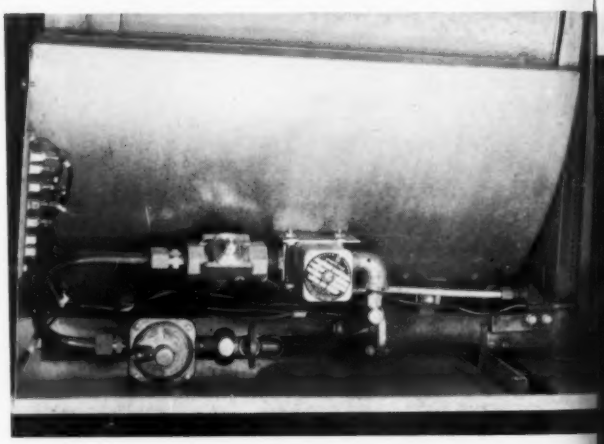
Below: Back view of Norge electric dryer before top and heating element cover are added.

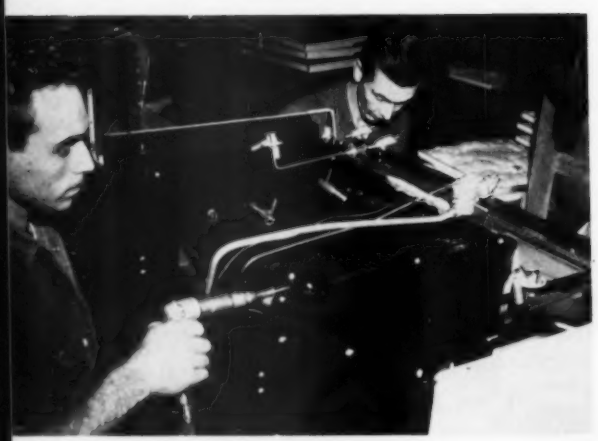


Above: Looking down final assembly line toward crating area.

Right: Top view of standard gas dryer unit showing gas control mechanism.

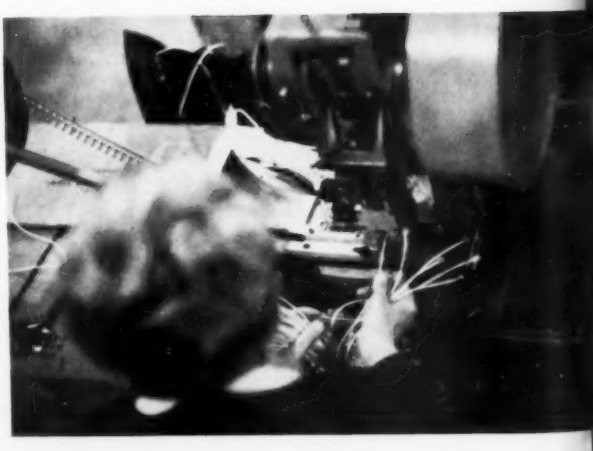
Left: Blanket of fiber glass insulation is wrapped around the range oven.





Left: Power tools are used extensively in assembly operations.

Right: Application of terminals to wire leads for electric dryer.



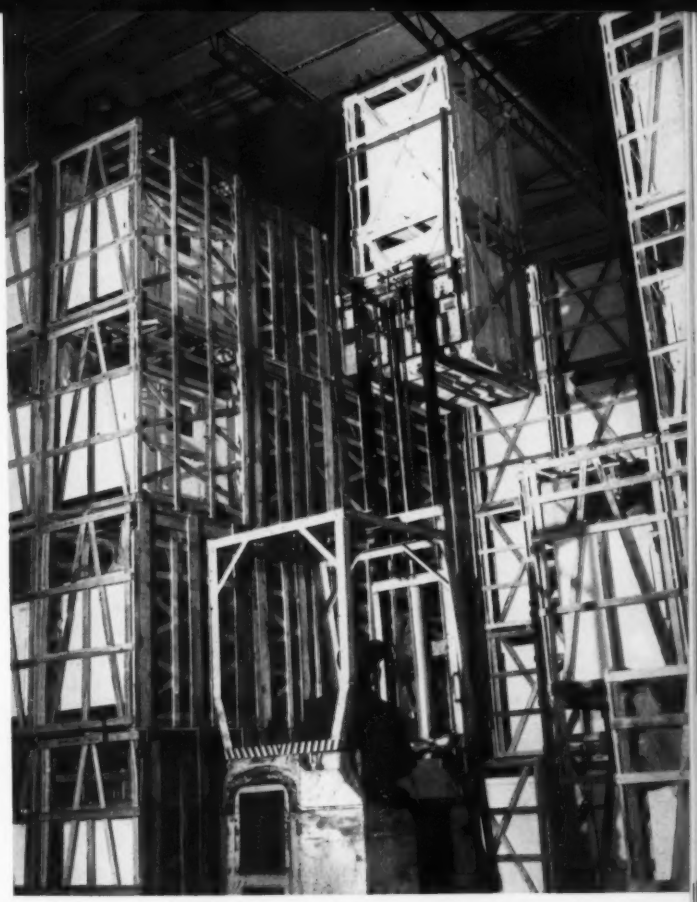
Right: A typical sub-assembly operation is completed near the main assembly line.

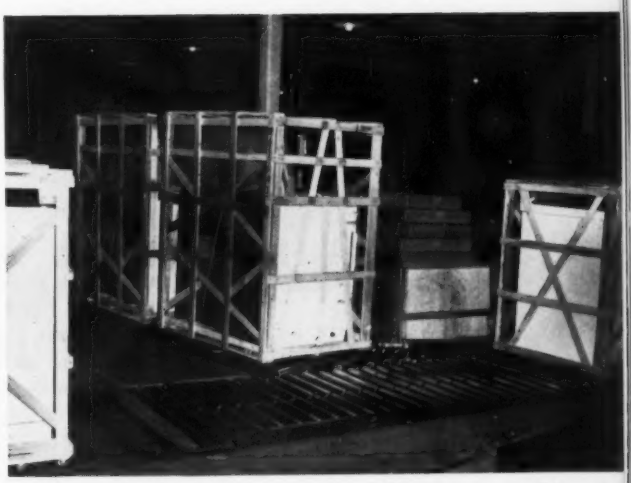
Left: Checking the gas flow to range burners and completing assembly line adjustments.

Woman in foreground places protective paper over range top, while second worker places paper hood over backsplasher.

Right: Powered truck with telescopic lift handles two crated appliances. Ranges are stacked four high, and dryers five high.

Left: Stapling the Safe Transit label to range crate.

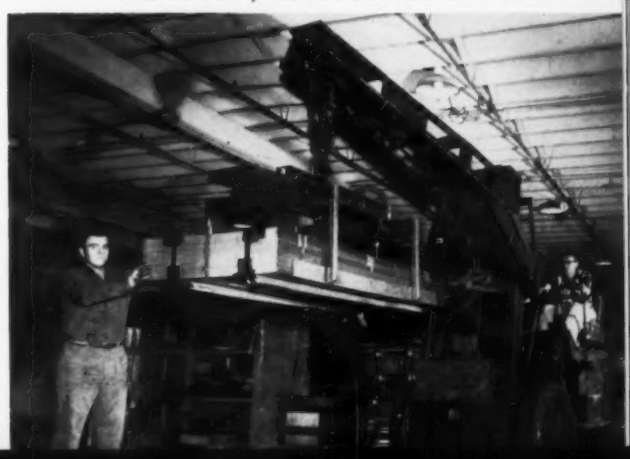




Above: Crating line for ranges and dryers meet at this point for transfer to belt conveyor leading to warehouse.

Below: A portable crane car is used to transport 10,000-lb. steel bundles from railroad cars or trucks.

Operated by pushbutton, this drawbridge permits powered trucks to bring component parts into the assembly area.



→ *from Page N-35*

After the backsplasher with timer is added, the range is given operational tests.

Typical dryer assembly operations

The bank conveyor, carrying finished dryer parts, dips down at a point near the middle of the long assembly line, and rises again at the head of the assembly line where the dryer cabinet is taken from the conveyor and placed back down on a lay-down belt conveyor. (While both gas and electric dryers are assembled on this line, the following description is concerned with electric dryers.)

After the crate base is attached, the cabinet is set upright and moved onto the slat-type main assembly conveyor.

Wiring harness (assembled nearby), motor, pulley wheels, heating element and cover for heating element are added. Power-driven tools are used extensively in assembly operations.

Midway down the line (where the bank conveyor dips down), the tumbler is assembled on a conveyor adjacent to the main line, utilizing four jigs. In the first jig, the baffles and cylinder front are attached. In the next jig, the inside cylinder back is added, plus the inlet guards for the three baffles. In the third and fourth jigs, lapped edges of the dryer drum are crimped to make it air-tight.

Meanwhile, more component parts are being added to the main dryer assembly, including pulley, blower fan, back panel, etc. Then the completed dryer tumbler is inserted. The pulley is tensioned and the dryer's operation is checked electrically.

The top and front, both assembled on opposite sides of the main conveyor, are then added. The top assembly includes the timer and control wiring. The front assembly includes the nameplate, air ducts, door (with felt seal), and the latch mechanism.

The completed dryer goes through a test room which straddles the assembly line. Here the units undergo final operating tests before crating.

Operational tests

On the line operational tests include the following:

1. Gas ranges are tested and operated to simulate actual practice in the home. Top burners are lighted via the pilot lights and oven burners lighted via the lighter horn or pilot. (Gas is supplied from an overhead line.) All joints and tubing are tested for leaks. In addition, all electrical wiring is tested at 1100 volts.

2. Electric ranges are tested by the operator using a test board with lights. The test board will indicate that the wiring is correct when the lights go on in their proper sequence. The board will indicate shorts, transposed wiring or broken connections. The board also checks electrical connections to the oven elements. In addition, all wiring is tested at 1100 volts.

3. Dryers—The automatic clothes dryer is checked, as soon as cylinder is assembled, for cylinder alignment and blower noise. After the dryer is completely assembled, an electrical check is made and all component parts must function properly.

Inspection test room

A special inspection test room is provided to check the operation of ranges and dryers taken periodically from the final end of the assembly line following final inspection. Ranges are tested for proper functional performance, accurate thermostat control, correct mechanical operation and for appearance. Similar random checks are made on dryers taken from final assembly following inspection.

It is a function of the engineering department to make the necessary tests on original models for compliance with American Gas Association standards and for compliance with Underwriters Testing Laboratory standards.

PACKAGING AND SHIPPING — MATERIALS HANDLING

Materials handling at the Norge Effingham plant combines the use of special equipment for handling steel and numerous fork lift trucks for interdepartmental delivery, for the handling of sheared sheets and for warehouse use. Conveyors are also used to the best advantage, combining overhead monorail type, where best suited, with motorized lay-down-conveyors of both belt and slat-types.

All packaging and crating operations are performed on a continuation of the three assembly conveyors. As an example of the routine on the packaging line, gas range crating operations will be described.

Packing component parts

After shelving, broiler pan and drip pans are inserted for proper fit, they are packed together with embossed paper pads separating the parts, which are then taped together and placed inside the oven.

The burner grates and bowls and vent trim, which also have been fitted for size, are packed in a small carton which is then placed in the storage compartment.

The front knobs are secured in position with a band of cloth tape. Creped cellulose cushioning material is inserted between the doors and the range body frame, and the doors taped shut with pressure-sensitive tape. A protective sheet of paper is taped in position across the top of the range, and a paper "cap" is dropped over the backsplasher and secured with tape.

Crate sides are nailed to the base with the crate back bolted to the range on opposite ends, just below the range top. The crate top is nailed to the side panels, completing the crate.

Safe Transit label attached to each crated appliance

The final stamp of approval is the Safe Transit label which is stapled to each crated range and dryer. This label assures distributors, dealers and customers that Norge has taken all necessary protective measures known to shipping science to insure the packaged products reaching their destination safely under normal handling and shipping practices.

to Page N-57 →

how Norge prevents abrasion damage with CROMWELL finish-protection covers

Even slight movement in transit creates static electricity. Result: tiny particles of dirt, dust and soot are attracted to unprotected surfaces. Abrasion from these grinding particles can ruin a fine finish. Norge, like so many other leading manufacturers, has a simple solution—a special Cromwell finish-protection cover that's "paper-engineered" especially to prevent abrasion damage.

tailor-made for your product to seal out dirt, dust and fumes

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Specified by leaders in safe transit packaging for appliances, furniture . . . any lacquer, porcelain, wood or plastic finish. Also available in double-thick paper with special non-stain laminant. Write for full details.

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Norge Division, Borg-Warner Corporation, and many other leading appliance manufacturers depend upon Chicago Mill and Lumber Company to provide safe shipment for their finished products.

If you are having difficulty in solving a troublesome shipping problem, call in a Chicago Mill representative. Technical information, packing information, and testing services are available without obligation.

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The Norge refrigerator

has come a long way

since 1937

... and so has Du Pont DULUX® enamel!

The 1937 Norge refrigerator delighted housewives with its efficiency and smart good looks. Yet over the years, Norge technicians have worked constantly to produce a model that gives the modern homemaker far more convenience and leisure than the shopper of eighteen years ago could ever hope for. The demand for the 1955 Norge Customatic Refrigerator-Freezer, with automatic defrosting, proves once again that continued product improvement is vital in maintaining the acceptance of the buying public.

And so it is with America's leading home appliance finish—Du Pont DULUX enamel. Constant research over the years by Du Pont chemists has resulted in a finish with rugged resistance to chipping, cracking, scratching and staining. *Now* DULUX is easier to clean . . . keeps its glistening white beauty longer than ever before! That's why the DULUX of today meets the most exacting requirements of *today's* top-flight appliance manufacturers. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

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. . . has helped sell 36,000,000 refrigerators!

A brief story of Norge operations at Muskegon Heights

photo highlights of a few of the highly mechanized operations for the production of refrigerators, home freezers and defense products

by Charles W. Martin • VICE PRESIDENT AND GENERAL MANAGER; ADAPTED FOR FINISH
by Matt Heuertz • ASSOCIATE EDITOR

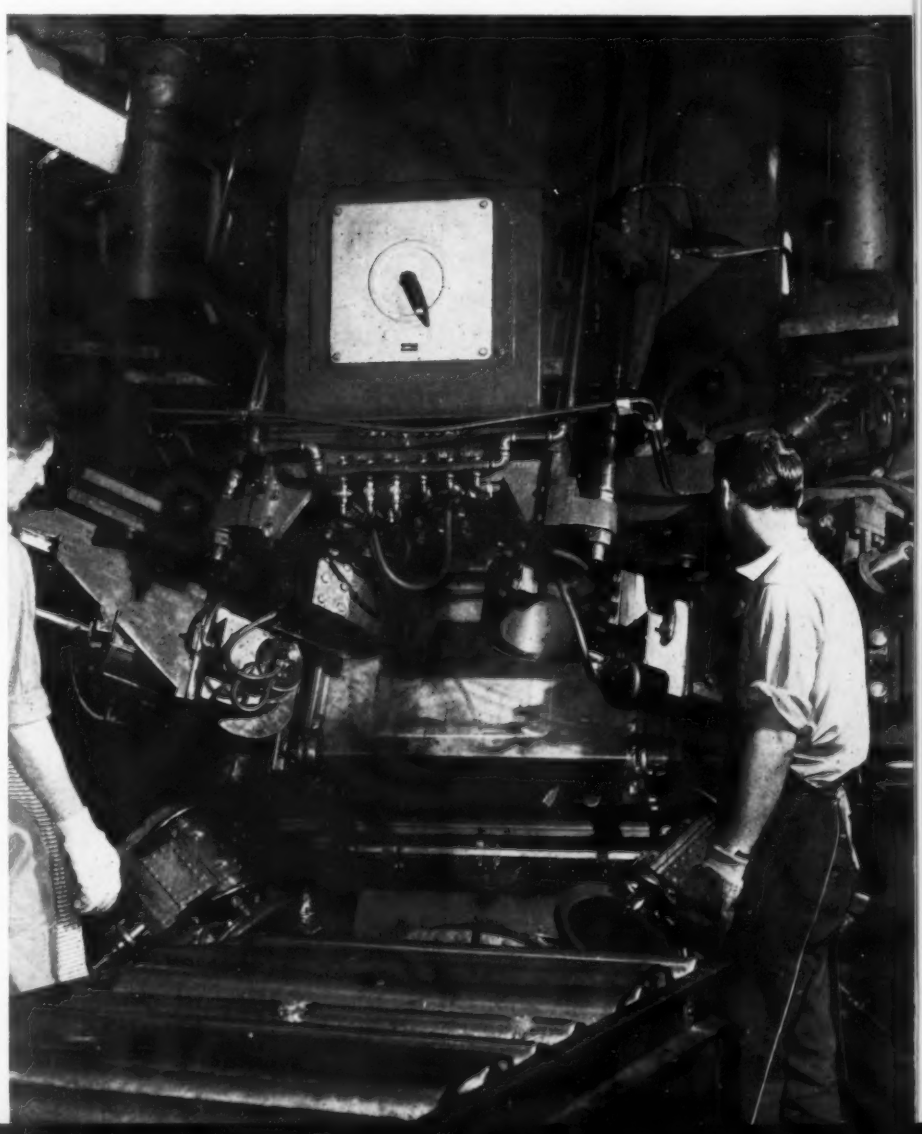
Exclusive feature finish

The plant, warehouse and adjoining buildings are located on a plot that covers approximately 28 acres. Prior to the establishment of Effingham and Herrin operations, all manufacturing for Norge products was carried on in Muskegon Heights, Michigan. Norge, today, in the Muskegon Heights operation, is engaged in the manufacture of refrigerators and home freezers, and a comprehensive aircraft program.

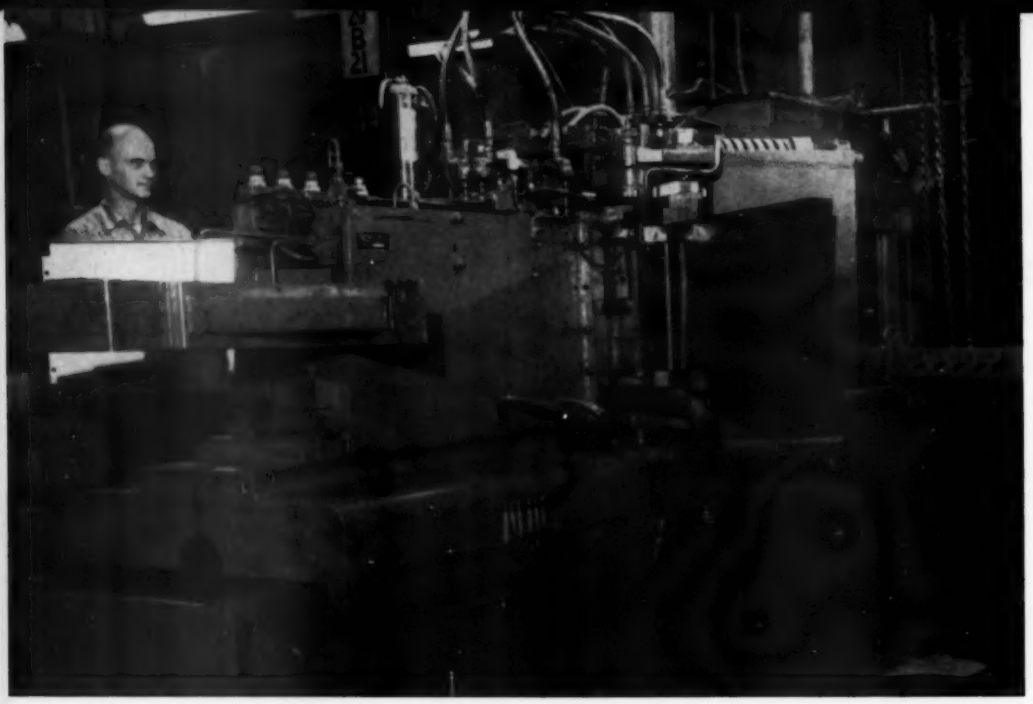
Operations for the production of refrigerators and freezers are very highly mechanized. The most modern equipment obtainable is used for transporting and producing the appliances from the raw steel into fabricated parts to the completely finished and crated refrigerator laid down in the warehouse ready for shipment.

One of the outstanding developments in the refrigeration phase of Norge activities was the introduction of the completely packaged refrigerator which was introduced in 1930. Prior to that time, the general mechanical refrigerator installation consisted of the cabinet and evaporator in one location, and the motor compressor and condenser mechanism had a separate location with a remote tubing hook-up usually separated by at least one floor of the building. In the case of a refrigerator in the kitchen, the condensing unit would be installed in the basement. Norge, by this very introduction of a completely packaged refrigerator, launched the new era that has occurred in the electric refrigerator market.

Initial development of electrostatic spraying of refrigerator finishes was accomplished through a pilot installation in this plant wherein we worked very closely with the spray equipment manufacturers. Through this joint effort an item as large as



One of the six-wheel resistance seam welders used in welding of the refrigerator food compartment liner. Machine is fully automatic with the exception of loading of liner parts.

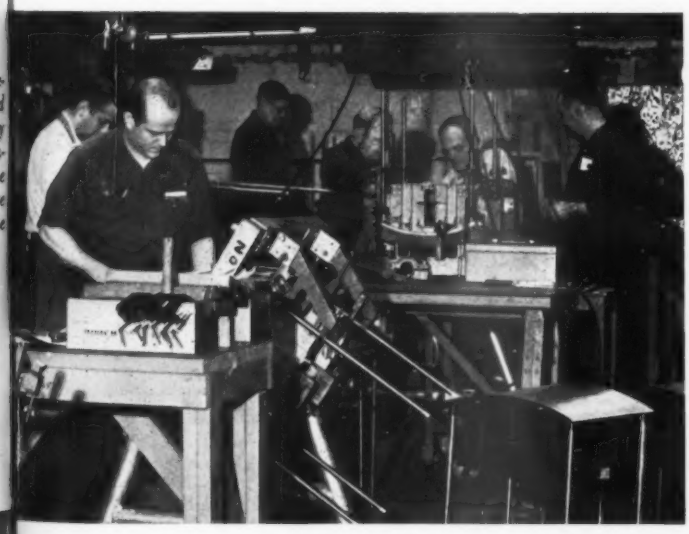


One of the tangent benders in the fabrication department. Here a refrigerator cabinet is being formed automatically into a U-shape.

The finish coat for the refrigerator cabinet is applied by an electrostatic spray system. Hand spray is employed on flanges and the interior of cabinet where not fully covered by the electrostatic system.

Refrigerator inner door liner sheet is made from polystyrene. Here two vacuum forming machines (left and center) mold the sheet into the final liner form, with final trim and piercing operations at right.

Sub-assembly of floor for an army tank. Operations shown include drilling and riveting operations necessary to complete assembly.



Assembly of an aircraft battery lift. These assemblies are completely fabricated, assembled and packed in the Muskegon Heights plant.

View of frame assembly of aircraft access door prior to applying skins. Accuracy of contours is required, therefore elaborate clamping arrangements are necessary on fixtures.

Refrigerator assembly line, showing one operator identifying model by stapling ticket to crate base, while another operator adds the evaporator door on the belt-driven assembly conveyor.

a refrigerator cabinet was successfully painted electrostatically. Everyone now knows what has happened to this type of painting throughout the industry. It has become a universally accepted method. Our operations at this plant by actual design and decision of our management are as autonomous as possible.

Good products make steady jobs

Our people, we feel, are all very quality conscious, and are instilled with the philosophy that building good products makes steadier jobs. Also, our quality record accomplished in our aircraft program speaks for itself. In this operation, we have between 500 and 600 people working on all types of aircraft fabrication, assembly and construction. We are manufacturing major components for types of high speed fighter craft and by the very nature of application, quality must be the watchword.

All our engineering for our domestic business and our aircraft program is located at this plant, together with research and development engineering on some new products.

Our porcelain enameling plant, which includes a large 11-burner continuous furnace, is highly conveyorized for the efficient handling of parts through the finishing process. Refrigerator parts processed in this department include the inner liner and the crisper pans. It is interesting to note that our refrigerator design permits the liners to be finished without brushed corners.

Vacuum forming plastics

Approximately a year ago, initial development work was started on vacuum forming. Today, for 1955, we have in operation a Plastics Division which is a result of this initial research work, and it is being utilized to produce the interior door panel of our new line of refrigerators and freezers, and certain other smaller allied plastic items.

Vacuum forming of plastic sheet, within the past year, hit the market with rather tremendous impact. There are contributing factors for this . . . newly developed, moderately priced equipment, comparatively low cost tooling, and low unit cost production.

The basic vacuum forming operation consists of clamping the plastic sheet in position above a mold, movement of a heater over the sheet, and, at the proper softness of the sheet, applying a vacuum through holes in the mold which quickly draws the

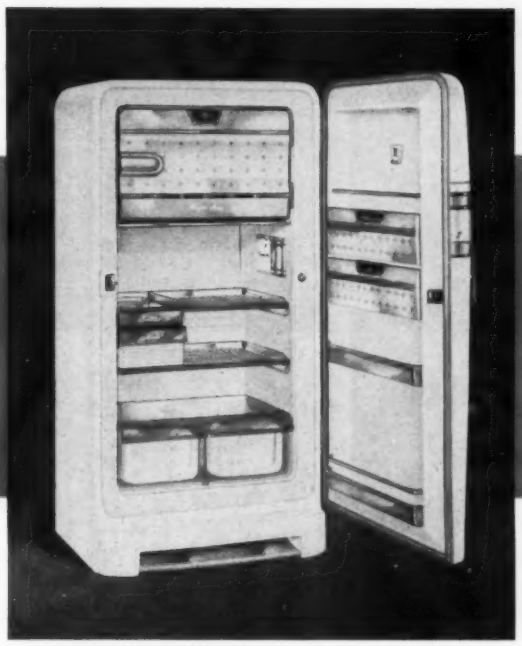
to Page N-56→

Refrigerators getting final inspection and adjustments before final crating operations. Note that units already have crate back bolted in position.

APEC

Quality

FRITS



American Porcelain is proud to have had the opportunity of serving the Muskegon Heights plant of Norge Division, Borg-Warner Corporation during the past 17 years.

APEC frits are used for the production of the porcelain enameled interiors of Norge refrigerators to produce a sanitary, trouble free finish for Norge customers.

If you haven't tried APEC frits for refrigerator parts or for any other standard porcelain enamel product, we suggest you call on us for a demonstration of their easy working properties and cost saving possibilities.

American Porcelain Enamel Co.

QUALITY APEC FRITS

1285 E. KEATING AVENUE • PHONE 2-8808
MUSKEGON, MICHIGAN

SALUTE

TO A PROGRESSIVE INDUSTRY

NORGE

Since 1932 we have supplied door gaskets, extruded parts, and molded rubber items to NORGE and its predecessor firm, Alaska Refrigerator Company.

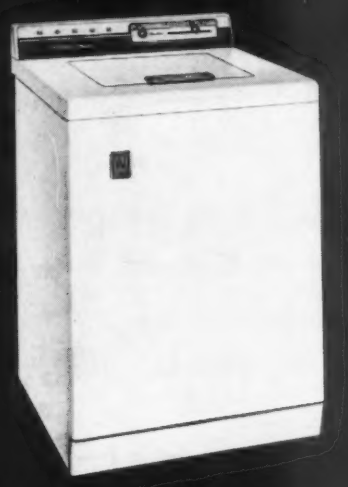
We regard this long and pleasant business relationship as a genuine distinction, and we are proud to have supplied rubber parts essential to the manufacture of products that have earned world renown for their high quality.

Corduroy RUBBER COMPANY

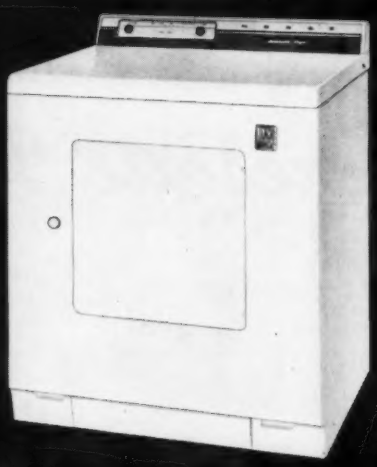
FACTORY AND OFFICES — GRAND RAPIDS 1, MICH.

***Corduroy*... MAKERS OF PREMIUM QUALITY TIRES, TUBES AND INDUSTRIAL RUBBER PARTS SINCE 1919**

NORGE



knows how SORENG components



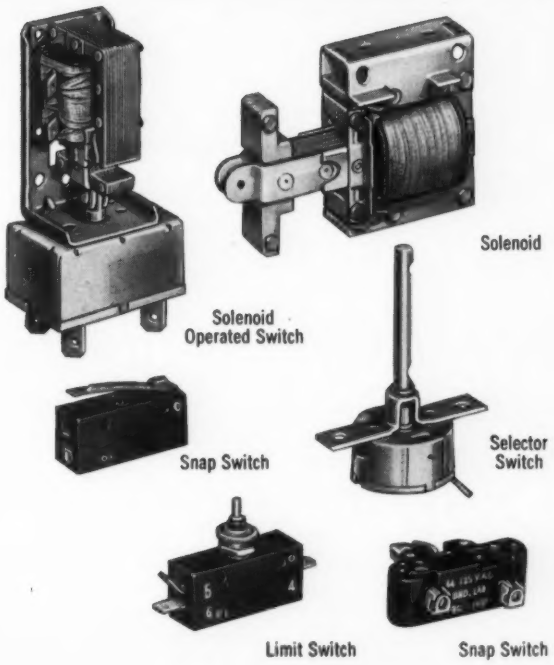
reduce REAL costs—DO YOU?

Norge specifies 6 Soreng components for the Time-Line "Laundry Maids"

Like other leaders in the appliance industry, Norge knows that the *real cost* of a component is its cost per year of service life. So low first cost must always be tempered with "how long will it last?"

By this yardstick Soreng measures well indeed. Whether you need solenoids or switches, timers or terminals, valve coils or other appliance controls, you'll find our products deliver highest quality at lowest production costs.

To be sure your new model will be competitive, write for specific information or, better still, consult with our engineers at the earliest design stage.



SORENG

PRODUCTS CORPORATION 9559 SORENG AVENUE, SCHILLER PARK, ILLINOIS

Plants: Schiller Park, Ill., Fremont, O., Spring Valley, Ill.

OTHER SORENG PRODUCTS FOR THE APPLIANCE, AUTOMOTIVE AND AIRCRAFT INDUSTRIES

Presque Isle Plastics, Inc.

INJECTION MOLDERS

We are happy to have had the privilege of doing business with the Norge Division of the Borg-Warner Corporation for several years.

Our engineering knowledge and experience plus modern facilities has enabled us to meet the high quality standards required by the Norge Division.

We have knowledge and experience from original design to finished product.

Prospective customers are invited to inspect our plant.

Presque Isle Plastics, Inc.

2730 WEST 12TH STREET

ERIE, PENNA.

SPECIALISTS IN LARGE CASTINGS

A photo story of washer production at the Herrin plant

photo highlights of the Norge plant where "Time-Line" automatic washers and wringer washers are produced

MATERIAL SUPPLIED *by L. R. Ardis* • VICE PRESIDENT AND GENERAL MANAGER

Exclusive feature finish

Norge Time-Line automatic washers and wringer washers are manufactured in the Herrin, Ill., plant. The buildings are constructed of brick and steel with glazed steel sash to provide a maximum of daylight. The ceilings are of sufficient height to allow installation of overhead conveyors for stock transfer and storage. The roof is insulated to provide maximum comfort to employees. The buildings have excellent unloading and loading facilities for both truck and railroad hauling.

This plant has a modern machine shop equipped with screw machines, multiple spindle drilling machines, grinders, lathes, turret type turning equipment, gear shapers, gear shavers, broaching machines, etc., used for the fabrication of washing machine parts.

Stampings are fabricated from sheet steel in a press room fully equipped with shears, brakes, tangent benders, and presses of various sizes and types.

The plant has a welding department equipped with spot welders, both the gang and single type, projection welders, seam, arc, and gas welding equipment.

The two automatic washer assembly lines and wringer washer assembly line are equipped with variable height power driven slat-type conveyors, and modern equipment and tools for assembly and inspection. The stock of enameled parts is conveyorized under the roof of the plant with take-off stations at necessary intervals for line feeding.

Carloading is motorized for efficiency and speed of handling. →

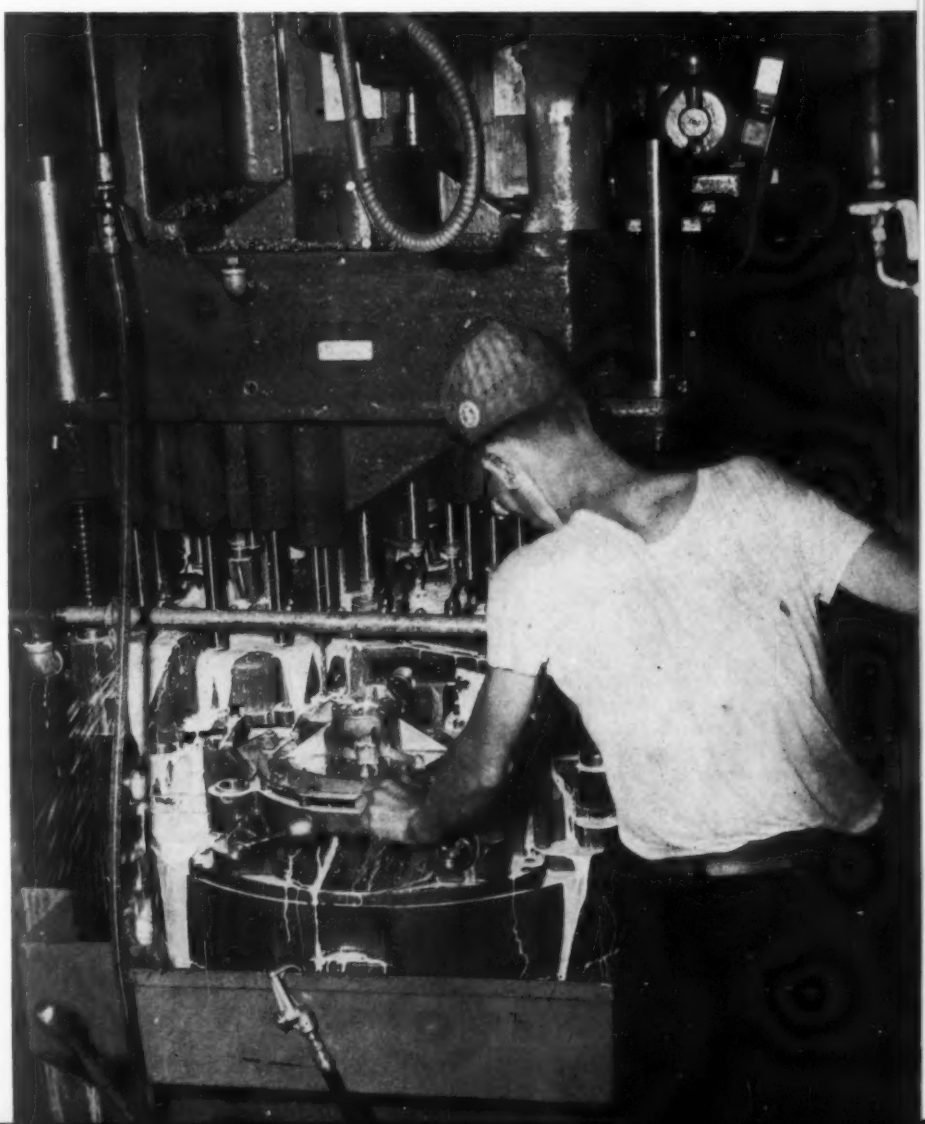


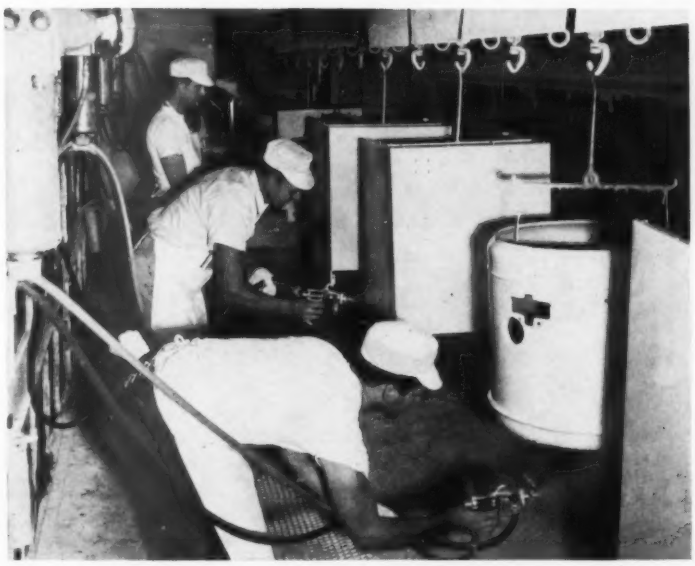
Photo shows one of the multiple spindle drill presses drilling and reaming the holes in transmission case for the "Time-Line" automatic washer.

Photo taken at Norge plant in Herrin, Ill., shows a line of production equipment used in fabrication of cabinet body for automatic washer. Line-up includes welder, tangent bender and press brake.

A section of the press room which is fully equipped with shears, brakes, tangent benders, and presses of various sizes and types.

View down long assembly line for conventional (wringer-type) washing machines. Note that washers already have shipping crate bases attached.

eiling of the Herrin plant is of sufficient eight to permit overhead conveyor stor- e of synthetic enamel parts for Norge washers.

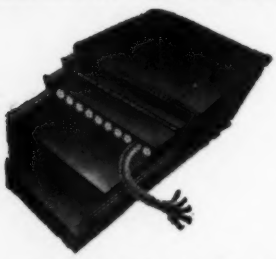


oom with pend- rious *pray room for the application synthetic enamel to exteriors both wringer-type and auto- matic washing machines.*

View down one of two similar assembly lines for automatic washers. The tops for these washers are porcelain enameled at the Effingham plant.

Suppliers to Norge and Other Leading Appliance Manufacturers of:

FRACTIONAL HP V-BELTS PRECISION MADE . . . PERFECTLY BALANCED



Durkee-Atwood FHP V-Belts give silent operation, require fewer adjustments, and deliver maximum efficiency. Durkee-Atwood "High Cord Line" design places the entire body of the belt under compression and reduces slippage and wear. The row of powerful rayon cords insures less stretch and cooler running.

RUBBER AND SYNTHETIC HOSE

◆

MOLDED RUBBER PARTS

◆

SPONGE RUBBER PRODUCTS

◆

DURKEE-ATWOOD COMPANY — DA PRODUCTS SINCE 1870 — MINNEAPOLIS 13, MINNESOTA

NAGEL-CHASE CASTERS and PULLEYS ARE USED ON NORGE APPLIANCES

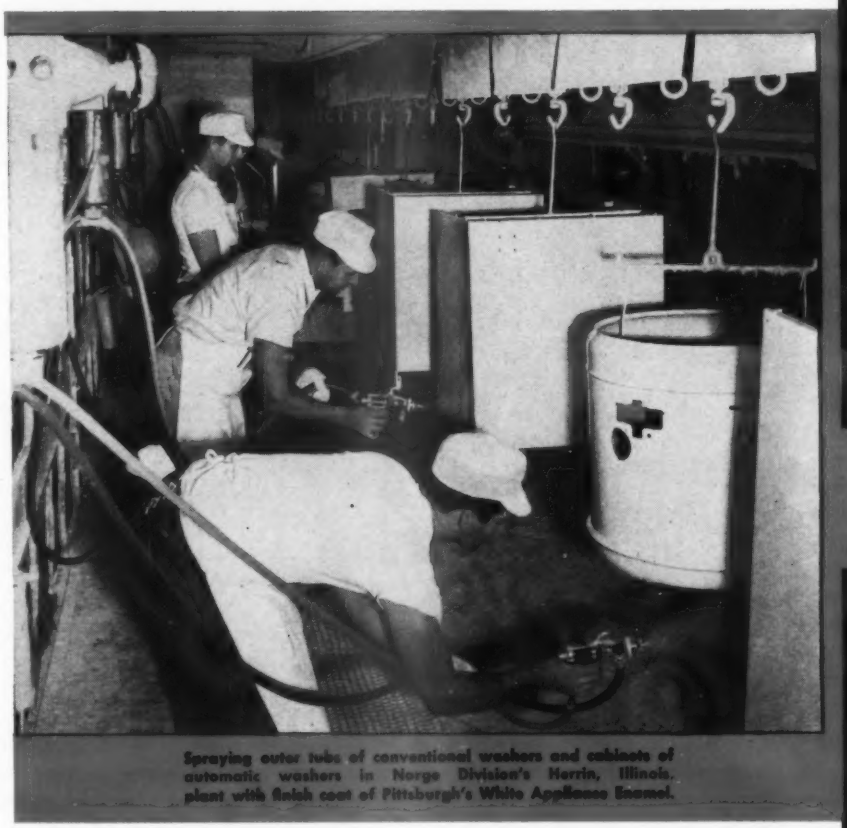
The Nagel-Chase organization considers it a privilege to serve as a supplier of casters and V-belt pulleys used on the outstanding line of Norge appliances. Manufacturers, with rigid standards of quality and performance such as Norge, are always quick to recognize the advantages of doing business with specialists like Nagel-Chase, with similar high quality standards.

For a quarter of a century Nagel-Chase has been supplying the leading appliance manufacturers with casters and pulleys. You can use their resources and experience to advantage. A letter with your requirements will receive a prompt reply.

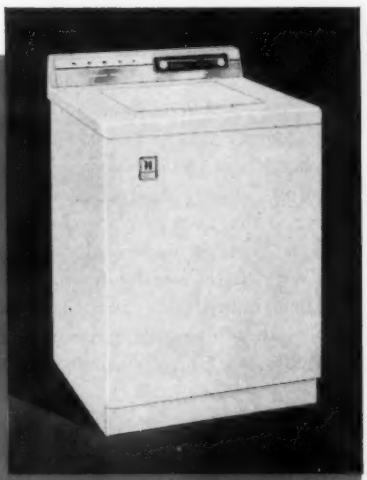
THE NAGEL • CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

Pittsburgh Appliance Finishes

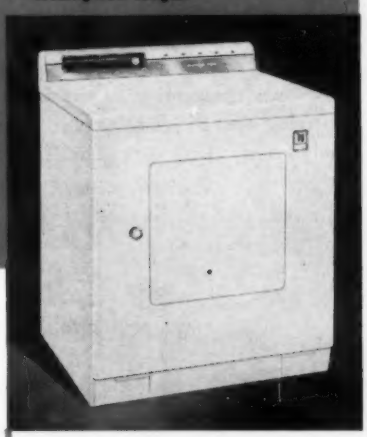
add to the eye appeal and durability of famous **NORGE** Products



Spraying outer tubs of conventional washers and cabinets of automatic washers in Norge Division's Herrin, Illinois, plant with finish coat of Pittsburgh's White Appliance Enamel.



By resisting the effects of hot detergent solutions and moisture, specially-designed Pittsburgh's Epon Primer and White Appliance Finish keep NORGE automatic washers and electric dryers looking new longer.



NORGE joins the long list of appliance manufacturers who have learned by experience that Pittsburgh finishes best meet their requirements.

Pittsburgh's Epon Primer and White Appliance Enamel are used by the Norge Division of the Borg-Warner Corporation on automatic washing machines and clothes driers. Primer is applied by conventional type flow-coat machines. Finish coat is hand sprayed. Both finishes are baked on.

These excellent materials provide a film of uniform thickness that withstands abrasion, yet is so flexible that it has unusual resistance to impact.

These coatings dry to a rich, luxurious gloss that adds to the eye appeal of these products and assures the retail purchaser of long-lived beauty. In addition to their excellent color stability these coatings provide superior resistance to moisture and detergent solutions.

Both primer and finish coats are adaptable to a wide range of baking schedules and application methods. Why not let us discuss your finishing problems with you, without cost or obligation? Write, phone or wire the nearest plant listed at right.

PITTSBURGH PLATE GLASS CO.,
Industrial Paint Division, Pittsburgh, Pa.

Factories: Milwaukee, Wisc.; Newark, N. J.; Springdale, Pa.; Atlanta, Ga.; Houston, Tex.; Torrance, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. Thresher Paint & Varnish Division, Dayton, Ohio. Forbes Finishes Division, Cleveland, Ohio. M. B. Suydam Division, Pittsburgh, Pa.

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

The New Norge

→ *from Page N-7*

ance industry has an exciting future.

The living standard in 1975 will be twice as good as it is now, according to informed sources. Production will increase through use of automatic machines, devices invented to eliminate dull, routine tasks. The work week will be 30 or 35 hours, some 15 per cent of all families will own two cars, the population will increase to 200 million.

We are aware of such facts as the higher living standard, growing population, and other market data so close to the heart of researchers. We see a genuine opportunity for the NEW NORGE, and for the entire appliance industry, to turn these facts into industry growth and continuing stability.

The latest additions to the appliance line of The New Norge includes built-in ovens and surface cooking units which are starting to come off the production lines in the Effingham plant.

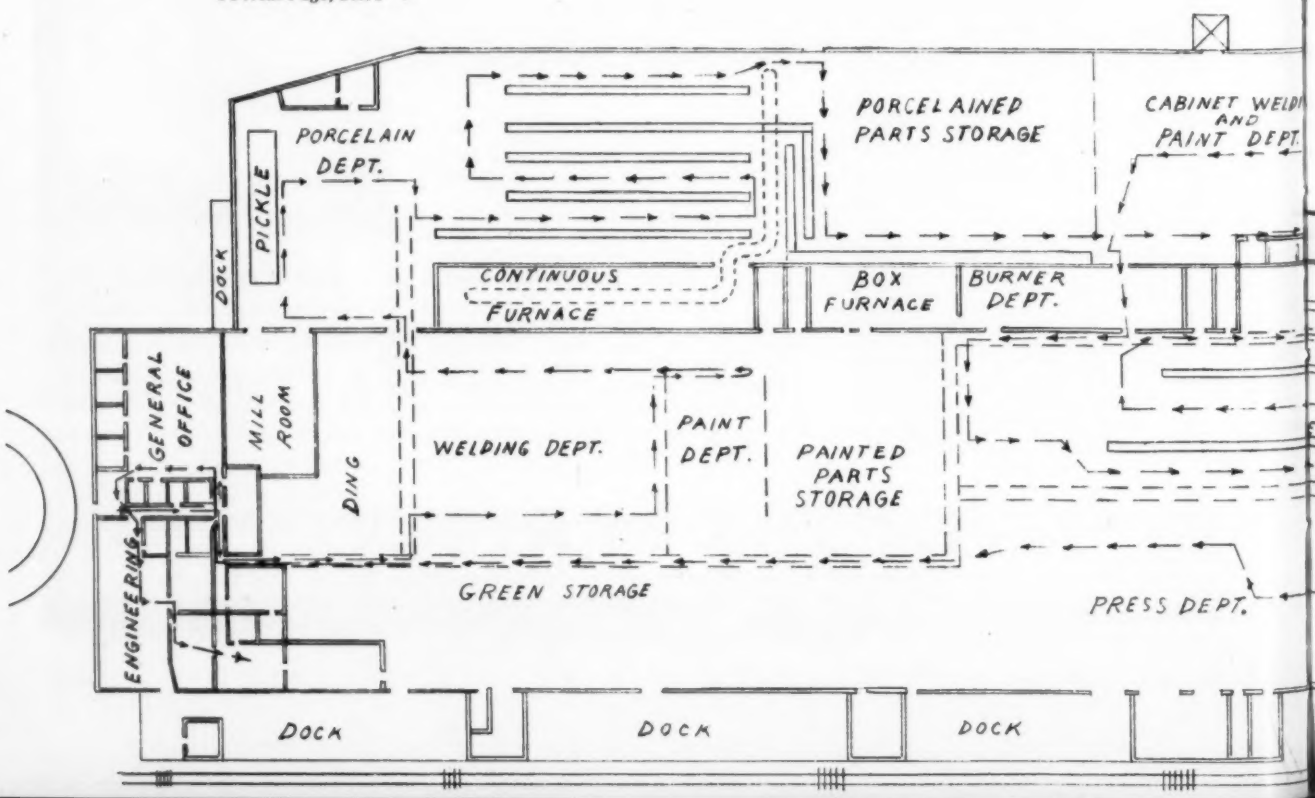
Muskegon Heights

→ *from Page N-46*

sheet over the mold while it is in a pliable state. The form sheet is then cooled and removed from the mold.

We are starting with the polystyrene "chips" or powder in our operation at Norge, and are extruding our own sheet prior to the vacuum forming operations. Vacuum formed polystyrene has very fine thermal

To Next Page, Col. 1 →



J. G. Elmore, vice president and general manager, Effingham.

L. R. Ardis, vice president and general manager, Herrin.

C. W. Martin, vice president and general manager, Muskegon Heights.

break characteristics and also resists impact and breakage which occur during assembly operations and later in use. The many shapes and contours that a vacuum forming sheet can be pulled into offer a widely diversified application.

This Plastics Division, we believe, only serves to emphasize that progressive attitude of our present top management to keep abreast of new developments and utilize these developments in all phases of manufacturing in the various plants. We, in the Norge Muskegon Heights Division, have a clear cut purpose to produce better quality products in the refrigerator and freezer field in an ever-increasingly efficient manner, and at lower costs. We know that if this is our watchword, the future success of this operation is assured.

Effingham plant

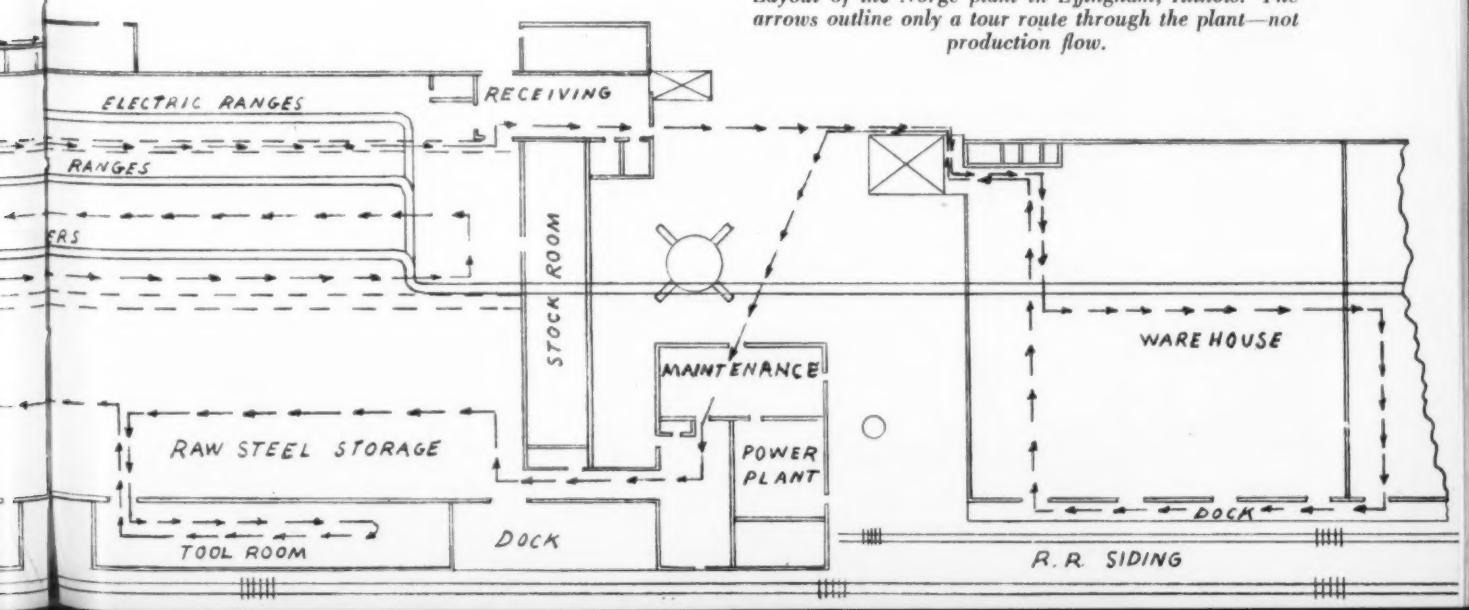
→ *from Page N-38*

An interesting material handling innovation has been incorporated in the roller conveyor which runs across the end of the three assembly lines. It consists of two drawbridge sections in the roller conveyor which can be lifted to permit powered trucks to bring component parts from storage into the assembly area. The drawbridges are operated by push buttons.

Both the gas and electric range assembly lines junction with a roller conveyor which carries the crated appliances to the end of the dryer assembly line where all crated appliances are shunted onto a belt conveyor which carries the products up into an overhead enclosed conveyor system leading to a three-bay warehouse where they are stored until ready for carloading. There is a storage capacity for 10,000 units. (Most carloads consist of mixed lots of dryers and ranges.)

In the warehouse, crated ranges can be stacked four high, and dryers five high. A powered truck with a telescopic lift can handle two crated appliances (one on top of another) at a time.

Layout of the Norge plant in Effingham, Illinois. The arrows outline only a tour route through the plant—not production flow.



MUSKEGON HEIG
MICHIGAN

NORGE DIVISION APPLIANCE MANUFACTURING PLANTS

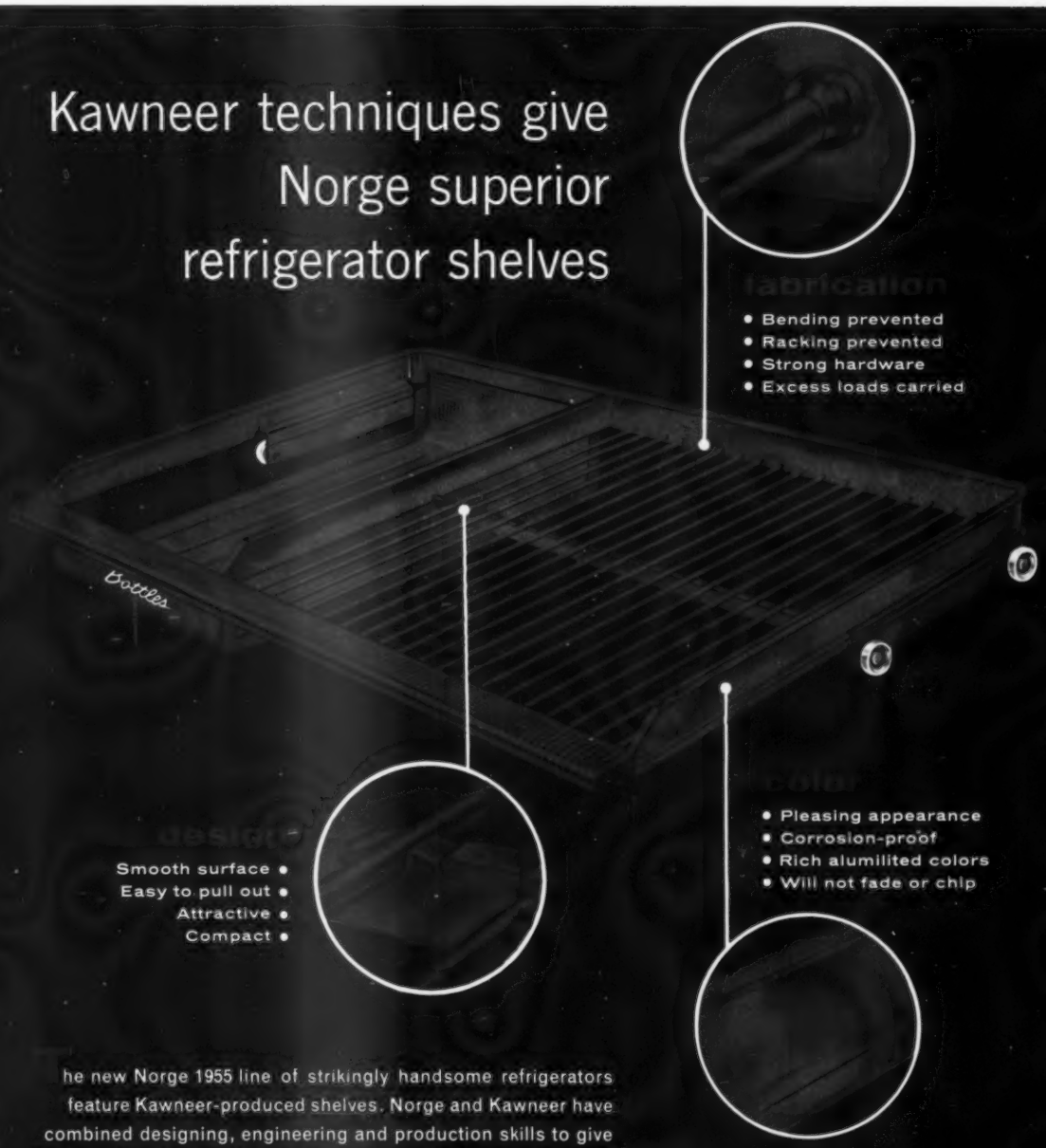
EFFINGHAM ↑
ILLINOIS

NORGE FACILITIES

The Norge Division of Borg-Warner Corporation maintains executive offices and display rooms in Chicago. The company's ranges and clothes dryers are manufactured in the Effingham, Illinois, plant. Both automatic and conventional washers are made in the Herrin, Illinois, plant. Refrigeration products are produced in Muskegon Heights, Michigan, where the company also produces defense products for the government. The appliance service division is located in Muskegon, Michigan.

HERRIN
ILLINOIS

Kawneer techniques give Norge superior refrigerator shelves



he new Norge 1955 line of strikingly handsome refrigerators feature Kawneer-produced shelves. Norge and Kawneer have combined designing, engineering and production skills to give the American housewife new conveniences in her "most-used" appliance. The Norge refrigerator shelves are designed, fabricated and colored using Kawneer techniques, many of which are exclusive. To learn more about that extra "touch" that makes all Kawneer products superior, write or phone the Appliance Products Division, The Kawneer Company, Cynthia, Kentucky.

Kawneer
NILES, MICHIGAN
Berkeley, Calif. · Lexington Ky. · Toronto, Can.

APPLIANCE PRODUCTS DIVISION

The NEW NORGE has the New Look with *Microtube* surface heating elements

New slim, flat-top Microtubes have the modern look demanded on today's newest electric ranges . . . plus fast heat-up, quick response and uniform heat.

NEW High Speed

Thin-tube Microtube units are hot in ten seconds—without any expensive gadgets. Flat heating surface transfers heat instantly to cooking utensils.

NEW Instant Response

Slim Microtubes have only 1/3 the mass to heat up or cool down. So they respond more rapidly to every flick of the switch.

NEW Uniform Heat

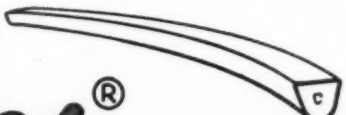
Flat-top Microtubes provide uniform, all-over heat pattern. Put more heating surface in contact with cooking utensils.

NEW "Cooler Cooking"

Thin, flat-top Microtubes fit all pots and pans. Put heat into cooking—not into kitchen.

EDWIN L. WIEGAND COMPANY
Pittsburgh 8, Pennsylvania

CHROMALOX
Microtubes®



It's the slim flat-top tube that makes the difference

CARRIER AND AFFILIATED GAS PLAN TO MERGE

Cloud Wampler, president of Carrier Corp., of Syracuse, N. Y., and Lyle C. Harvey, president of Affiliated Gas Equipment, Inc., Cleveland, have announced an agreement to merge the two companies through an exchange of stock. The combined sales of the two companies totalled $277,000,000 in 1953.

LOVELL APPOINTS HELBERG GENERAL SUPT.

It has been reported that Theodore O. Helberg has been appointed general superintendent of Lovell Manufacturing Company, Erie, Pennsylvania.

MAGIC CHEF DEVELOPS "COOL" PILOT IGNITION

Savings of as much as 5c a day are a reality with Magic-Lite, a new cool pilot ignition system developed by Magic Chef, Inc., St. Louis, according to a spokesman. The savings figures are based on a cylinder of LP-gas costing $9.00 per 100 lbs. The new ignition system utilized a tiny coil of nichrome wire and a bead of flame.

VULCAN-HART MOVES TO NEW PLANT

Vulcan-Hart Mfg. Co., manufacturers of heavy duty cooking equipment, has moved to its new plant located at 3600 N. Point Blvd., Baltimore, Maryland.

SEE UNLIMITED AIR CONDITIONING PROSPECTS

Air conditioning is America's fastest growing industry, with "almost inexhaustible markets" still barely scratched, according to John A. Gilbreath, manager of air conditioning division of Westinghouse Electric Corp., Pittsburgh, Pa.

Gilbreath forecast that sales of air conditioners for residential, commercial and industrial use will soar 1000% in the next 10 years.

AIR CONDITIONING SHIPMENTS UP 18% OVER 1953

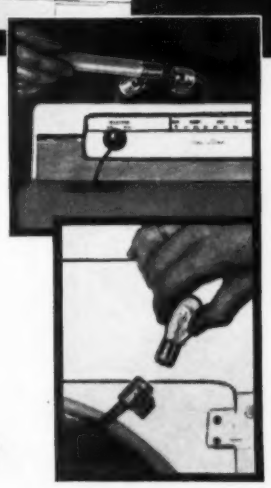
Manufacturers' shipments of room air conditioners for 1954 will be about 1,230,000 units, compared with 1,044,691 units in 1953, an 18% increase, announced Geo. S. Jones, Jr., managing director of the Air-Conditioning and Refrigeration Institute.

WHIRLPOOL TO BUILD NEW ADMINISTRATION BLDG.

Plans have been announced for construction of a new $1,500,000 administration office building to house administrative, sales and advertising personnel of Whirlpool Corp., St. Joseph, Mich., it was announced by Don Alexander, vice president — operations. The three-story building will contain 50,000 sq. ft. of office space.

PROGRESS OF AUTOMATION IS EVOLUTIONARY — SAYS GENERAL ELECTRIC EXECUTIVE

The predicted change in the ratio of plant equipment to land and buildings from 2:1 to 4:1 in the next decade will be largely a result of the increasing emphasis on the automation of production processes, according to Dr. L. T. Rader, general manager, specialty control department, General Electric Co. He added that progress of automation will be evolutionary, rather than revolutionary.



More EFFICIENCY— More SALES APPEAL— for the NORGE Automatic Dryer with

DRAKE ASSEMBLIES

Two DRAKE-socketed lamps strategically placed on the Norge *"Time Line"* Automatic Dryer give this prize-winning appliance a finishing touch of utility and convenience which adds positive sales appeal for Mrs. Housewife. With these lamps, dryer controls and contents are easily visible at all times. DRAKE No. A1100 Double Contact Candelabra Bayonet Socket Assemblies are used.

You'll find DRAKE Assemblies giving extra use and sales values to many appliances in the Norge and other leading lines. DRAKE's advanced design, careful manufacture and low costs can give *your* product a "plus", too — let us quote on your job!

★ *To get a quick picture of DRAKE'S broad line, send for your copy of catalog F.*

DRAKE

DRAKE MANUFACTURING COMPANY

1711 WEST HUBBARD ST. • CHICAGO 22, ILL.

SOCKET & JEWEL LIGHT ASSEMBLIES

with the
RANSBURG NO. 2 PROCESS
Paint mileage jumps
84%
in the finishing of
G-E AUTOMATIC WASHERS

. . . and **74%** in finishing G-E DRYERS

Production is increased and quality of the work is improved over former hand spray method

● When General Electric formerly hand sprayed their home laundry equipment—automatic washers and dryers—they painted 9.74 washers with a gallon of paint. Now, in the new and modern plant at Appliance Park, Louisville—where they're using the Ransburg No. 2 Process—they get 17.97 units per gallon of paint. An increase of 84%!

And, where they formerly got 5.49 dryers per mixed gallon of finish, now—with the Ransburg No. 2 Electrostatic Spray Process—they get 9.56 dryers per gallon of paint. An increase of 74%!

Along with increased production, G.E. is getting a more uniform, higher quality finish. Another typical, on-the-job-example of the unmatched efficiencies of the Ransburg No. 2 Process of electrostatic spray painting!

Want to know what Ransburg Electrostatic Processes can do for you in your finishing department? Ask about the complete facilities for test-painting YOUR products—under simulated production conditions—in Ransburg laboratories.

Ransburg **ELECTRO-COATING CORP.**
Indianapolis 7, Indiana

RANSBURG

Paint, varnish, lacquer industry meets

Battley reelected president of National Paint, Varnish and Lacquer Association at annual meeting—Guthman named vice president

MORE than 2000 manufacturers of paint products and raw materials suppliers attended the annual convention of the National Paint, Varnish and Lacquer Association, held in mid-November at the Palmer House, in Chicago.

Principal speakers included Harold C. McClelland, president of the National Association of Manufacturers, who discussed "A Blueprint for Industrial Statesmanship"; George A. Landry, former vice president of Western Electric Co., who talked on "The National Defense Mobilization Program"; and Leo Cherne, executive director, Research Institute of America, who presented his views on the outlook for 1955.

Joseph F. Battley, president of the Association since 1947, was reelected to the same post.

Leo Guthman, president of Bradley & Vrooman Co., Chicago, was elected vice president of NPVLA.

Paint industries show

Immediately following the three-day NPVLA meeting, the Federation of Paint and Varnish Production Clubs held their annual meeting and Paint Industries Show. Snapshots of some of the booths at the three-day show will appear in February *finish*.

The president's report

In his annual report, Battley confidently predicted that over-all sales of the paint industry would top the record of $1,415,000,000 set in 1953. "While these figures are encouraging, a two and a half billion dollar industry should be normal for us," he stated.

"The seminars of the Industrial Product Finishes Division had another record attendance this year," said Battley, who gave Joe Hager, division chairman, credit for the growing success of the meetings. The second symposium of the Technical Subcommittee (formerly the Lacquer Subcommittee) was also well attended this year, he added.

Government specifications

The "U.S. Government Paint Specifications" was reported as being in a new format and brought up to date. The Association has also finished the Army Ordnance Department's specifications for shell and gun paints, and is now bringing up-to-date the department's older specifications for ground equipment.

Battley also reported marked progress in the Association's efforts to have the Navy give up its paint manufacturing business. The Business and Defense Services Administration of the Department of Commerce has completed their studies of government competition with industry, and paint manufacturing was considered an unnecessary government operation.

The Association has offered its cooperation to the Department of Defense in finding new jobs in the paint industry for Navy paint personnel, and to assist in disposing of surplus machinery, equipment, raw materials, etc. *to Page 111* →

Joseph A. Hager (right), vice president of Grand Rapids Varnish Corp., was awarded the George Heckel Award as the man contributing the most toward advancing the paint industry during the past year. Hager has been chairman of the NPVLA Industrial Product Finishes Steering Committee for six years. Joseph F. Battley, NPVLA president, made the presentation.

SPRA-CON

automatic paint applicators

Serve these
important companies

Maytag

Westinghouse

SYLVANIA

Deepfreeze

Oasis

America's ABC

Laundry Queen

Arm Washer

The new Spra-Con Rotary Arm Washer has been proved to be the most effective and economical method for the continuous cleaning of many diversified metal parts in volume production.

The **SPRA-CON COMPANY**

ENGINEERS AND MANUFACTURERS OF WASHERS, OVENS, AUTOMATIC PAINT APPLICATORS

INTERNATIONAL HARVESTER COMPANY
EVANSVILLE WORKS

BEN-HUR
America's Finest

THE NATIONAL RADIATOR COMPANY

Whirlpool

STEEL Craft

TROY

Hotpoint

SEND FOR THIS FREE BOOKLET

• These familiar trade marks represent some of the many quality and cost-conscious manufacturers who are using the Spra-Con Automatic Paint Applicator to improve their product finishes and to materially decrease application costs.

You, too, can improve the quality of your finished products and *save thousands of dollars in production costs* by changing to the *Modern* method of prime coat* application.

These advantages will be yours:

1. Lowered paint consumption.
2. Reduced "in-process" paint.
3. Uniform coating thickness.
4. Reduced air makeup.
5. Reduced manpower requirements.
6. Reduced maintenance.
7. Eliminates compressed air.
8. Eliminates water consumption.

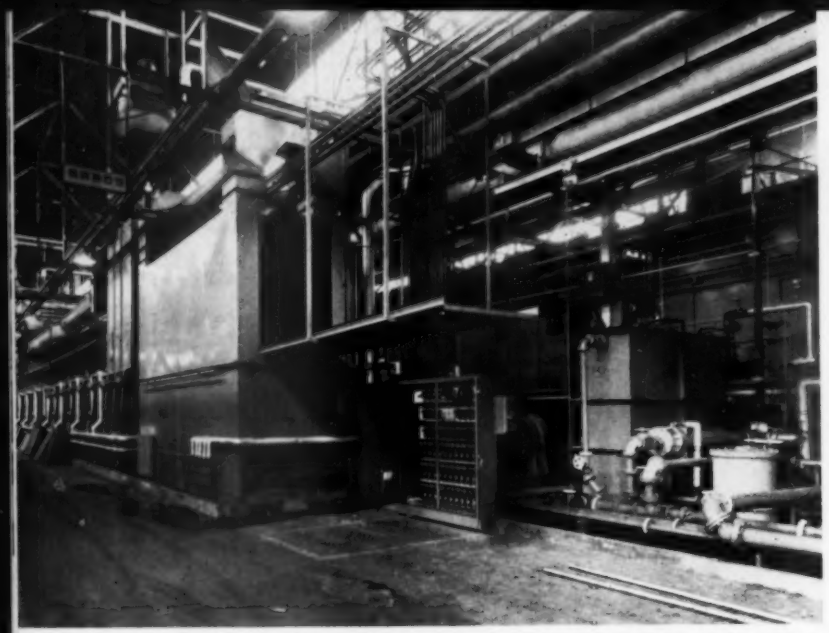
These and many other less tangible advantages add up to *better quality at lower cost.*

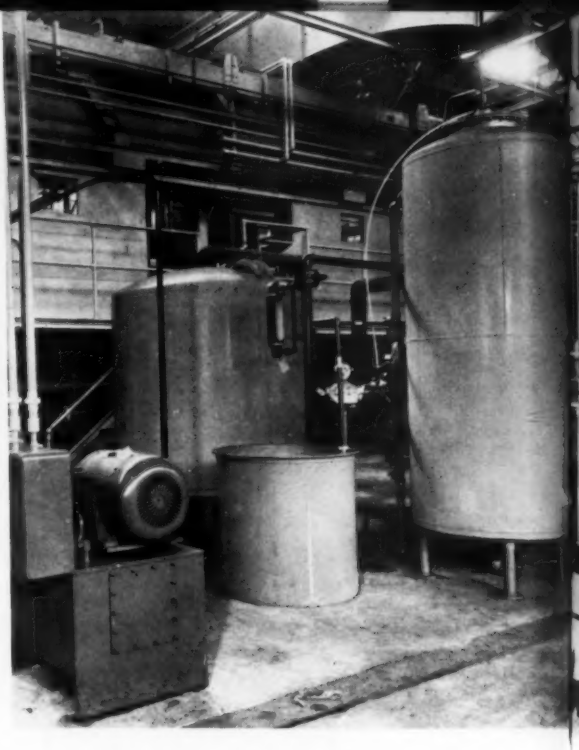
An automatic paint applicator *can pay for itself in one year's time.*

*On many products, the Automatic Paint Applicator can be used for finish coat work also.

3600 ELSTON AVENUE • CHICAGO 18, ILLINOIS

CONVEYORS, AND EQUIPMENT FOR COMPLETE PAINT FINISHING SYSTEMS





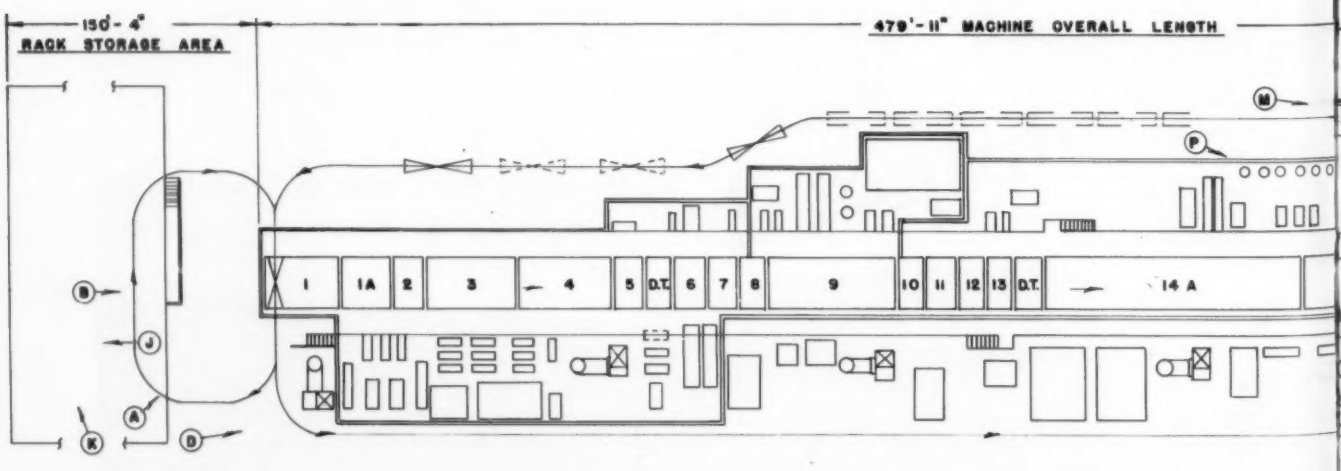
Above: Section of machine with filters, heat exchangers, mixing tank (right); control panel (center); strip tank, spray wash (left to center).

Right: One of two hydraulic drive units in foreground, with water softener equipment to the right.

Automatic selective cell plating machine

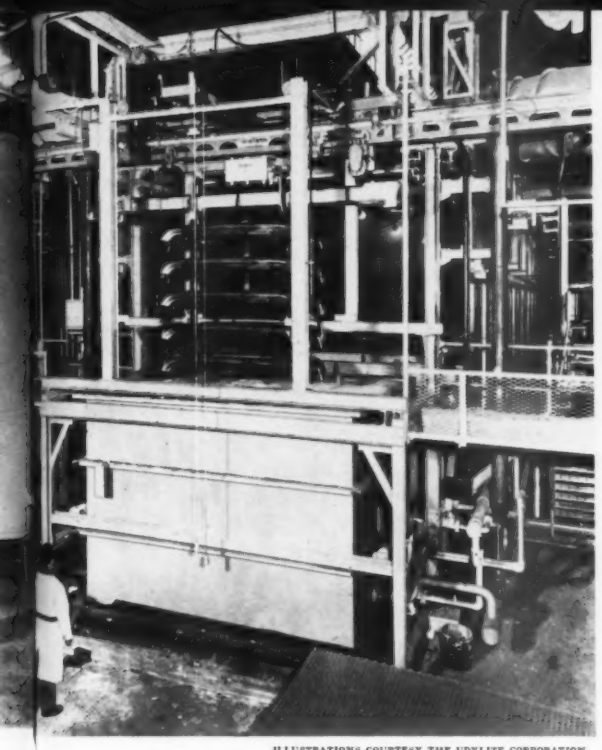
brief photo story of automatic bumper plating operation at the Pontiac Division of General Motors

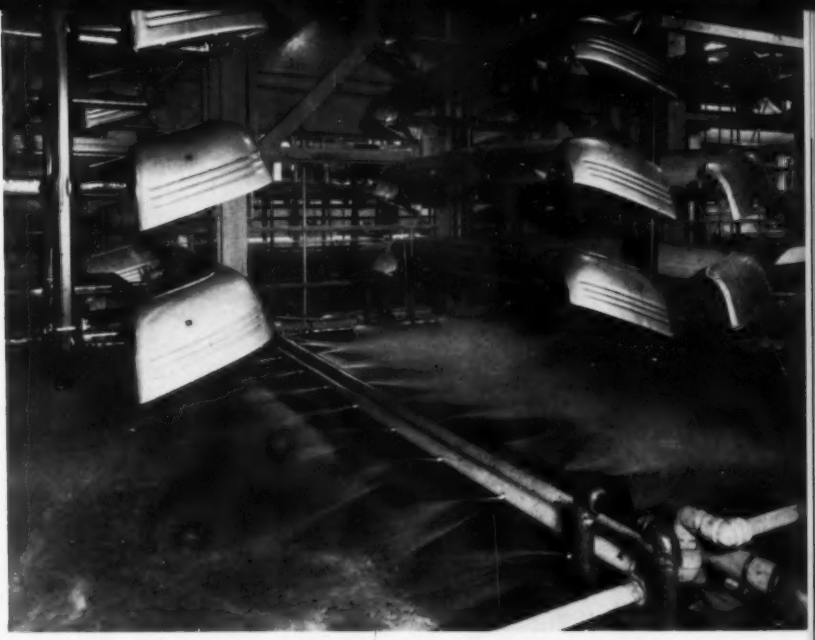
A NEW type of plating machine is now in operation at the plant of the Pontiac Division of General Motors Corp., Pontiac, Michigan. Designed to operate on a 2-minute cycle to plate 30 racks of bumpers per hour, the machine is 460 feet long, 15 feet wide, and 18 feet high. It handles racks of 12 bumpers each to



STA	PROCESS	TIME
1	LOAD & SOAK CLEAN	2.5 MINUTES
1A	SOAK CLEAN	2.5 MINUTES
2	WARM WATER POWER SPRAY	1.25 MINUTES
3	POWER WASH	3.75 MINUTES
4	CATHODIC CLEAN	3.75 MINUTES
5	COLD WATER RINSE	1.25 MINUTES
	DRAIN & TRANSFER	45 SECONDS
6	ACID DIP	1.25 MINUTES
7	COLD WATER RINSE	1.25 MINUTES
8	CYANIDE DIP	1.25 MINUTES
9	CYANIDE COPPER STRIKE	5 MINUTES
10	RECOVERY RINSE	1.25 MINUTES
11	COLD WATER RINSE	1.25 MINUTES
12	COLD WATER RINSE	1.25 MINUTES
13	ACID DIP	1.25 MINUTES
	DRAIN & TRANSFER	.5 MINUTES
14A	ACID COPPER	0-30 MINUTES

STA	PRO	TIME
14 B	ACID COPPER	30 MIN
	DRAIN & TRANS	MIN
15	RECOVERY RINS	MIN
16	COLD WATER RI	MIN
17	COLD WATER R	MIN
18	NICKEL STRIKE	MIN
	DRAIN & TRANS	MIN
19A	NICKEL PLATE	30 MIN
19B	NICKEL PLATE	30 MIN
	DRAIN & TRAN	MIN
20	RECOVERY RINS	MIN
21	COLD WATER RI	MIN
22	COLD WATER	MIN
23	ACID DIP	MIN
24	COLD WATER RI	MIN
25	WARM WATER	MIN
26	CHROME PLATE	MIN





Left: Upper level of storage area at loading end, with elevator in "up" position, over soak clean tank, with load of bumper bars

Above: Racks of bumper bars over power spray wash in the rinse section of the fully automatic selective cell plating machine.

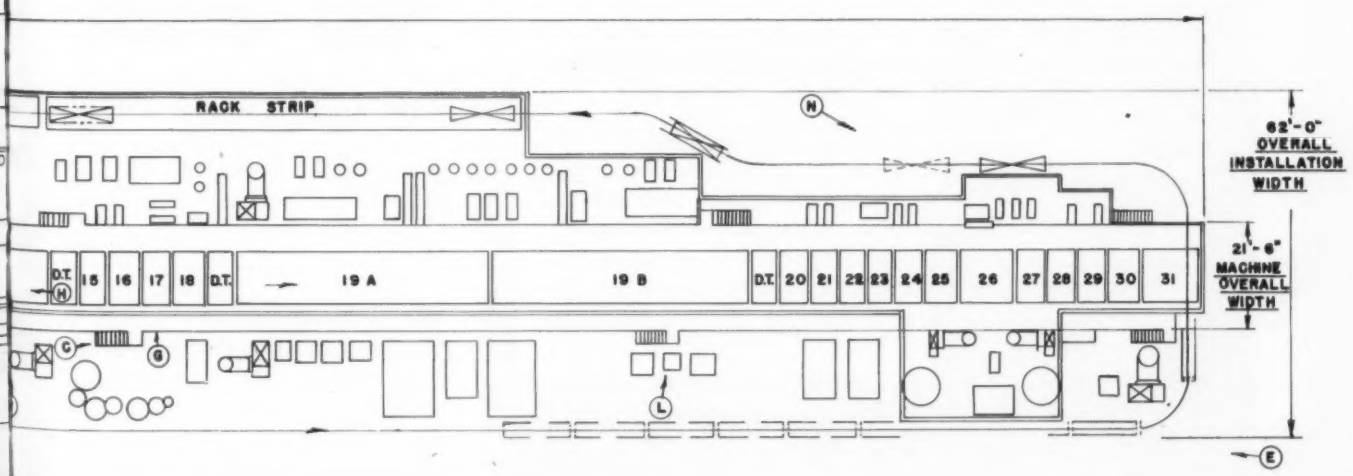
ILLUSTRATIONS COURTESY THE UDYLITE CORPORATION

give an hourly production of 360 bumpers.

This machine, known as an automatic selective cell plating machine, is particularly well suited to large parts requiring a conforming anode arrangement not suited to normal automatic operation where work passes between rows of anodes.

In operation, the automatic selective cell plating machine allows racks of parts to remain at rest in the "nest" of conforming anodes in the cells of the plating tank for the duration of the required plating time, and during the plating time to provide for constant operation of tanks requiring less time, by selecting in sequence, empty cells in the plating section to accommodate the racks as they emerge from the proceeding operations.

As indicated, all electrified tanks are equipped with conforming anodes forming the "nests" into which the racks of bumpers are lowered for plating, etc. Also, on electrified tanks the cathode contacts are elevated to permit the work to enter the tanks "hot."



STA	PROCESS	TIME
27	RECOVERY	1.25 MINUTES
28	COLD WATER RINSE	1.25 MINUTES
29	COLD WATER RINSE	1.25 MINUTES
30	HOT WATER RINSE	1.25 MINUTES
31	HOT AIR BLOW OFF	1.25 MINUTES

TANK DEPT. 7'-4"
GENERAL HEIGHT OF MACHINE 18'-3"

SCHEMATIC LAYOUT STRAIGHT LINE
BUMPER PLATING MACHINE

The future is bright for gas appliances

(Continued from Page 29)

In addition to the rosy outlook in urban markets, there is the possibility of a banner year for gas appliances in the rural territories. The number of domestic, commercial and industrial users of LP-gas is likely to reach a new high of over 7,500,000, and there is good reason to believe that the ratio of rural to metropolitan appliance sales in 1955 will increase substantially. Rural customers already absorb nearly 25 per cent of our output.

The use of gas for commercial and industrial purposes continues to zoom.

With opportunity banging at every door, all branches of the industry are stepping up their promotional efforts, and the outlook in this respect—as typified by developments in the Gas Industry Development Program—is for closer cooperation among manufacturers, pipeliners and utilities, than has ever been accomplished in any year of our history.

The industry's own prospects are, of course, irrevocably linked with the general outlook for the nation. But it doesn't take an expert to prove that our present national economy is made to order for any industry with a good product and a proven capacity for public service. The gas appliance industry would appear to qualify.

NEW MONARCH

CLEANING and FINISHING

Are just a follow-through of *part* of our extensive production facilities.

Starting with engineering and design, New Monarch's services include a complete follow-up of dies, tools, stampings, welding, assembly, finishing, and packing.

Over 40 years of experience and their accumulated benefits are your assurance that New Monarch can produce for you the very finest of stampings—with the greatest economy consistent with *super quality.*

Write us today

For a Complete From-Blue-Print-to-Shipping-Carton Service.

IT'S NEW MONARCH YEAR AFTER YEAR

When in need of stampings, see

NEW MONARCH MACHINE & STAMPING CO.
406 S.W. NINTH STREET DES MOINES 9, IOWA

BUEHLER NEW PRESIDENT OF REFRIGERATING ENGINEERS

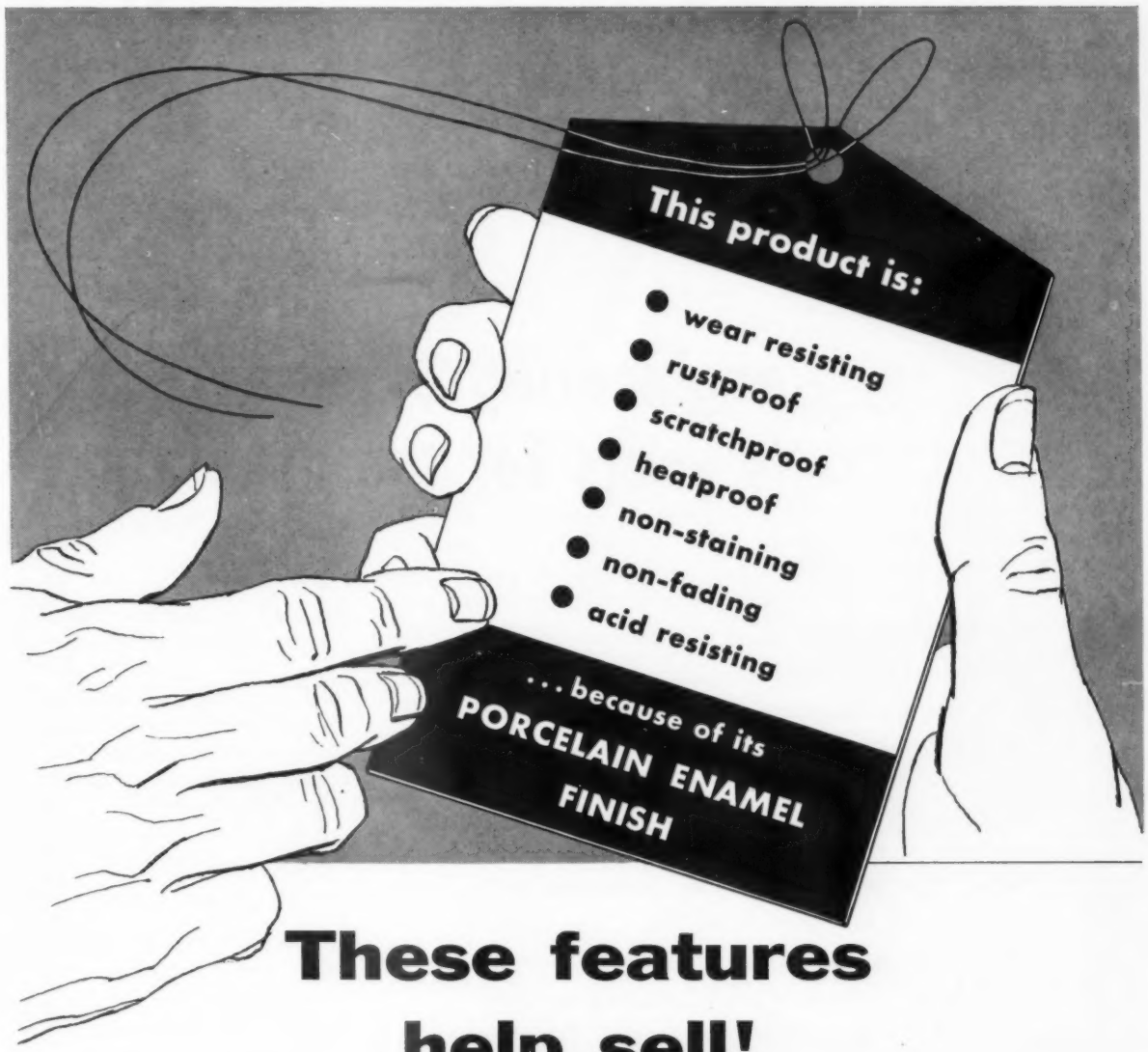
Leon Buehler, Jr., chief refrigeration engineer, Creamery Package

Mfg. Co., Chicago, was installed as president of the American Society of Refrigerating Engineers at the 50th annual meeting in Philadelphia.

He holds more than 25 patents on refrigeration equipment and processes.

MERCHANDISE MART LISTS NEW HOUSEWARE, APPLIANCE TENANTS

The Merchandise Mart, Chicago, has announced the following new tenants in the houseware and appliance field: The Cal-Dak Co., manufacturers of laundry and hostess carts; Superior Electric Products Corp., makers of household electrical appliances; Preway, Inc., gas and electric appliances, and Camfield Mfg. Co., producers of electric toasters and coffeemakers.

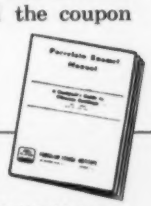


These features help sell!

Porcelain Enamel provides the longest-lasting, easiest-to-clean, most stain-free, heat-proof, corrosion-resisting, scratch-proof finish known today! With these advantages, your products have greater *sales appeal* because buyers appreciate the beauty and durability of Porcelain Enamel.

Actually, Porcelain Enamel is not just a finish—it is a distinct material composed of a non-corrosive, completely inorganic coating inseparably fused at high temperatures (about 1500 F) to a metal base. It is strong, rigid and durable. It offers many opportunities to save money by replacing more expensive materials and by eliminating costly finishing operations.

We will be glad to send you an engineering manual in which you will find the very latest design information on this modern material. It may help you use Porcelain Enamel to reduce your costs and increase the salability of your products. Send the coupon today!



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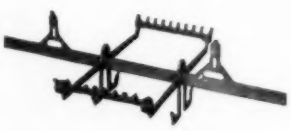
FAHRALLOY...

engineering experience is yours for the asking

For over 20 years Fahralloy engineering experience has helped solve many stubborn problems involving burning tools for the porcelain enamel industry. These range all the way from "S" hooks to complete fixtures for firing washing machine tubs.

The point is that no matter what your burning tool problem may be . . . no matter how tough you may think it is you can have complete confidence that you'll get the right answer at Fahralloy. Remember, too, that Fahralloy engineering experience is something that can't be bought — but it's yours for the asking.



FAHRALLOY BURNING TOOLS are the No. 1 choice of the Porcelain Enamel Industry

THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois

In Canada — Fahralloy Canada, Ltd., Orillia, Ontario

KIDD TO STEWART-WARNER

Alexander Kidd, formerly vice president of The M. W. Kellogg Co., New York, has been elected a vice president of Stewart-Warner Corp., Chicago.

Kidd will be responsible for assisting the operating managements of the six divisions of Stewart-Warner in the development of their sales to large accounts, other than distributors, jobbers and dealers.

KAISER METAL GETS CONTRACT FOR JET ENGINE COMPONENTS

Kaiser Metal Products, Inc., Bristol, Pa., has been awarded a contract by a leading aircraft engine company for a number of stainless steel jet engine components. R. L. Collett, vice president, Fleetwings Division, announced that the contract calls for fabrication and assembly of an intricate sheet metal unit for the engine.

SERVEL AWARDED CONTRACT FOR F-100 WING SPARS

Wing spars for the F-100 Super Sabre jet fighter will be built in the Servel plant, Evansville, Ind., according to an announcement by Duncan C. Menzies, president, Servel, Inc.

HOTPOINT MAKES KEY CHANGES ON MARKETING STAFF

Hotpoint Co., Chicago, has made the following personnel changes in its marketing organization, according to John F. McDaniel, vice president of marketing:

Dwight R. Anneaux, director of apartment house and builder sales; J. A. Bell, manager of utility sales; David H. Grigsby, merchandising manager of ranges and water heaters; and R. H. Poll, transferred to Chicago purchasing department from Minneapolis-Milwaukee territory.

MCLAUGHLIN TO ALLIED PORCENELL STAFF

John McLaughlin has joined the organization of Allied Porcenell, Inc., of Tulsa, Okla., and Waukegan, Ill., on sales and service. He was formerly associated with the customer service department of *finish*.

Allied Porcenell is introducing a new series of ceramic-type finishes (see *finish*, Dec. '54, page 64).

RHEEM DEPT. WORKS 9 YEARS WITHOUT A LOST-TIME ACCIDENT

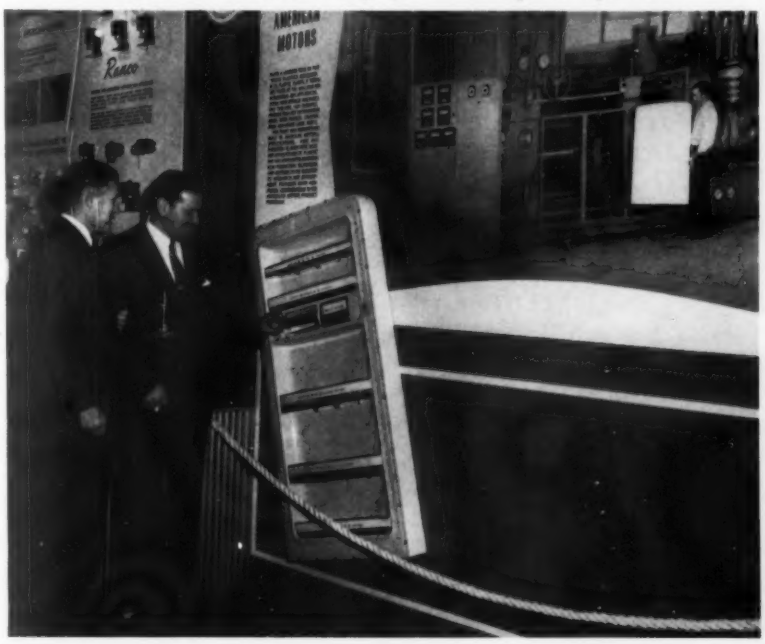
The galvanizing department of Rheem Mfg. Co.'s Chicago plant has operated nine years without a lost-time accident, Fran Leone, plant manager, announced.

Leone explained that such a record in the galvanizing department, where the men work with molten zinc and caustic solutions, is the equivalent of Rheem's operating its entire Chicago plant for a year without an accident.

"ALL AMERICAN MOTORS SHOW" VISITS CHICAGO

In Chicago, December 2, American Motors Corp. presented an exhibit, called the "All American Motors Show", designed, according to George Romney, president, to show "the vast scope of American Motors

Viewing one of the 23 pictorial and animated panels in the "All American Motors Show" are George Romney (left), president of American Motors and W. E. Gobeille, manager, Milwaukee plastics plant.



and subsidiary companies." Other showings were scheduled later in the month in Detroit and New York.

Surrounding the 8000 sq. ft. exhibit was a series of 23 pictorial and animated panels which gave a quick visual demonstration of the firm's strength and diversification.

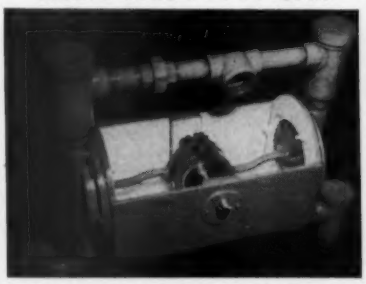
In addition to the manufacture and sale of appliances and automobiles, American Motors and subsidiaries are engaged in producing compressors, fabricated plastic parts and automotive and appliance controls.

In a short talk given at the meeting, Romney stated that their appliance line is doing very well. He said that home laundry equipment sales are up 225% over a year ago and their range sales are up 170% for the same period. In total number of units of all types of appliances, October, 1954, was up 122% over October, 1953; November, 1954, was up 140% over November a year ago.

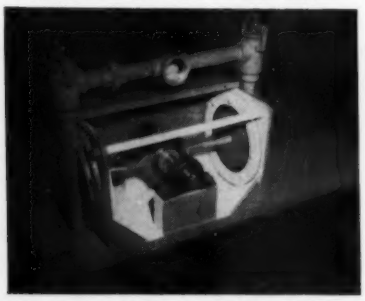
The list of VITRA-PUMP users reads like the blue book of American industry

AC Spark Plug
Alladin Ceramics
Altorfer Brothers
American Kitchens, Div. Avco Mfg. Corp.
Atlas Enameling Co., Inc.
Beach Foundry, Ltd.
Benjamin Electric Mfg.
Boston Stove Foundry Co.
Caloric Stove Corp.
Chicago Pottery Co
Columbian Stamping & Enameling Co.
The Coolerator Co.
Crane-Pacific Co.
The Enamel Products Co.
The Erie Enameling Co.
Erie Porcelain Co.
Florence Stove Co.
The Floyd-Wells Co.
Ed. Friedrich, Inc.
Frigidaire Division — GMC
Gaffers & Sattler Co.
General Electric Co.
Globe-American Corp.
Guelph Stove Co., Ltd.
Hotpoint Co.
Hussman Refrigerator Co.
Ingersoll Prods. Div., Borg-Warner Corp.
International Harvester Co.
Jones Metal Products Co.
Jungers Stove & Range Co.
Malleable Iron Range Co.
Maytag Company
Midwest Mfg. Corp.
Moffats, Ltd.
National Day Co.
Philco Corp.
Pittsburgh Corning Co.
Preway, Inc.
RCA Estate Appliance Corp.
Rheem Mfg. Co.
Geo. D. Roper Corp.
Sasha-Brastoff, Inc.
Seeger Refrigerator Co.
Servel, Inc.
A. O. Smith Corp.
Tappan Stove Co.
T & H Co.
Tennessee Stove Works
Vitreous Steel Products Co.
Vogue Potteries
Whirlpool Corp., Clyde Division

MODEL A-53 . . . 11 GPM



MODEL A-531 . . . 28 GPM



IF YOU HAVEN'T YET ORDERED YOURS, THERE'S NO BETTER TIME TO DO IT THAN NOW!

Exclusive Representatives to the Porcelain Enamel Industry

CHICAGO VITREOUS CORPORATION
1425 S. 55th Court,
Cicero, Illinois
East of the Rockies

MELVIN L. JONTZ COMPANY
5028 Alhambra Avenue,
Los Angeles, California
West of the Rockies

QUINN-ROGERS MFG. CO.
345 BURKHARDT CT. - FOREST PARK, ILLINOIS

STAATS & WEISKE NAMED TRANE ENGINEERS

The Trane Co., La Crosse, Wisc., has announced the appointment of George P. Staats as assistant development engineer.

Robert G. Weiske has been appointed as engineer in Trane's new research and testing laboratories.

CROWN STOVE APPOINTS MALECEK ENAMEL SUPT.

Walter F. Rogers, president, Crown Stove Works, Chicago, has announced

the appointment of Joseph Malecek, as superintendent of the enameling department.

Malecek has been connected with the porcelain enameling industry for over 28 years.

SCHICK NAMED AVCO FIELD SALES MGR.

C. E. Schick has been named national field sales manager of appliances for Crosley and Bendix Home Appliances Divisions, Avco Mfg. Corp.

Schick, previously a west coast regional sales manager for appliances, replaces H. J. Allen, recently named general sales manager of Crosley radio and television.

KUSHNICK HEADS INSTRUMENT SOCIETY OF AMERICA

William H. Kushnick has been appointed executive director of the Instrument Society of America, Pitts-

burgh. The Society is a technical organization of over 7,500 engineers, designers, consultants, technicians, and men of top management, who are engaged in the manufacture, application and use of industrial instruments and controls.

STARKS, FISCHER TO HEAD FRIGIDAIRE PLANTS 3 & 2

C. M. Starks, manager of manufacturing at plant four, Frigidaire divi-

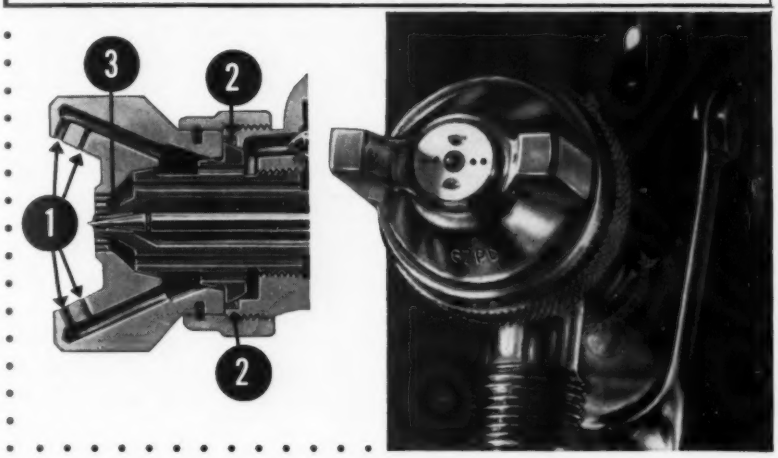
C. M. STARKS

G. F. FISCHER

sion, General Motors, Dayton, Ohio, has been appointed manager of manufacturing of plant three, according to W. L. McCarthy, works manager.

Starks replaces George F. Fischer, who became manager of manufacturing at plant two in October. H. F. Durr will continue with his regular assignment as general mechanical superintendent of plant three.

WHAT'S NEW in nozzles for ceramics



Sprays 8 full hours...without fogging

The new 67-PD Spray Nozzle for ceramic finishes has many advantages:

1. **It doesn't plug or fog.** In normal production spraying, Binks' new Ceramic Nozzle will spray a full shift continuously without the costly and annoying delays caused by plugging of air orifices. Gives a controlled pattern.
2. **It saves air.** This one-piece nozzle, machined from solid brass, uses precision ground surfaces to form and maintain a perfect air seal. There is no soldering and the nozzle does not depend on a retainer ring for an air seal.
3. **It prevents wear.** Special tungsten carbide inserts in the material nozzle and in the needle valve have 8 to 10 times greater life than alloy steels. These inserts won't break due to brittleness.
4. **It saves material.** The Binks Ceramic Nozzle will apply required film thickness in one pass. Properly used, the nozzle saves up to 20% in material.
5. **It operates at low pressure.** The Binks 67-PD Ceramic Spray Nozzle produces perfectly atomized pattern with air pressure as low as 30 lbs. at the nozzle. Better atomization is achieved through reduction in the number of air orifices, a complete rearrangement of orifice locations and a marked increase in orifice diameters.
6. **It saves time, reduces fatigue.** Finishes go on faster with fewer passes. Reduction of fatigue boosts production, eliminates rejects.
7. **It saves money—simple kit converts present equipment.** If you are now using the Binks Model 18V or 19V Spray Finishing Guns, just change nozzles. That's all it takes...you don't need to buy new spray guns.

Specifications: 63 CVT x 66 PH (0.052" orifice); 64 VT x 64 PA (0.064" orifice); 67 VT x 67 PD (0.086" orifice)

ASK FOR A DEMONSTRATION...see for yourself why ceramic finishers everywhere are switching to this new nozzle...are making it standard equipment throughout their shops. No obligation. Just call or write directly to the address below.

Binks
EVERYTHING FOR CERAMIC FINISHING

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ABC's of metal stamping

→ *from Page 27*

Slitting implies the substantially straight line severance of raw material in a slitting machine. It may also refer to the separation by shearing of multiple parts that have been processed as a unit. *Parting*, as a means of severing two adjacent parts, differs from slitting in that a narrow strip of metal between the parts is punched out as the means of separation. *Lancing* is a partial shearing operation that does not completely sever the part into two pieces.

Most of the single operations may be combined with other operations in the same class or with other operations in other classifications. A *compound die* includes blanking and piercing, both of which are in the shearing group. A *combination die* pertains to blanking and drawing operations which invades the shearing and drawing groups. A *compound-combination die* combines the function of the compound die and the combination die as it performs blanking, drawing and hole-cutting in one operation.

CAMBERE TO STEWART-WARNER

Ara A. Cambere, formerly vice president and director of the Oliver Iron and Steel Corp., Pittsburgh, has been named assistant to Bennett Archambault, president, Stewart-Warner Corp., Chicago.

MAGIC CHEF NAMES DUPREE GENERAL SALES MANAGER

Magic Chef, Inc., St. Louis, has announced the appointment of Kenneth O. Dupree as general sales manager, succeeding Marc W. Pender, who resigned.

Dupree joined Magic Chef in 1937 as a sales representative in the Carolina territory, and he has been sales manager of the southeastern division since 1945.

TIERS NAMED PROCTOR ELECTRIC EASTERN SALES MANAGER

Appointment of Joseph Tiers to fill the new position of eastern sales manager for Proctor Electric Co., Philadelphia, has been announced by Walter N. Schwartz, Jr., president.

RALSTON PURINA BUYS 7,000 WESTINGHOUSE ROASTER-OVENS

The purchase by Ralston Purina Co. of nearly 7,000 Westinghouse roaster-ovens, having a retail value of over one half million dollars, has been revealed by the Westinghouse Electric Appliance Division, Mansfield, Ohio.

The roaster-ovens were purchased for distribution to employees, stockholders and dealers in commemoration of Ralston Purina's 60th year in business.

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TO ATTEND THE FOURTH INDUSTRIAL FINISHING EXPOSITION

JUNE 20 21 22 23

1955

PUBLIC AUDITORIUM
CLEVELAND, OHIO

ONE idea picked up at the convention or show might save you thousands of dollars in the operation of your plant.

All sessions of the 42nd Annual Convention of the American Electroplaters' Society will be held under the same roof with the Industrial Finishing Exposition.

Every phase of industrial finishing, both organic and inorganic, will be covered.

Watch for programs, activities, and information about educational sessions to be announced later.

SPONSORED AND CONTROLLED BY

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For further information, or for exhibit space contact:
Harold E. Bartlett, Exposition Manager, or Albert W. Erickson, Jr., Manager, Space Sales
1955 INDUSTRIAL FINISHING EXPOSITION
1849 West 24th Street, Cleveland 13, Ohio

Paint industry meets

→ *from Page 00*

Industry must assure prosperity

At the conclusion of his report, Battley told the paint manufacturers that "as representatives of business, it is our reponsibility to convince the uncertain that we are determined to continue our progress — that we will assure prosperity. You must convince them (the uncertain) that the business world will never permit the development of another depression period such as we knew in the early thirties . . . . This is the real challenge to each one of us. If we can maintain the proper frame of mind among our people, we have no serious problem."

PAINT ASSN. ELECTS GUTHMAN VICE PRESIDENT

Leo Guthman, president of Bradley & Vrooman Company, Chicago, was

elected vice president of the National Paint, Varnish and Lacquer Association at that group's recent annual meeting in Chicago.

AVCO'S CRUM TO COORDINATE DEFENSE AND INDUSTRIAL SALES

The establishment of a new Avco defense and industrial sales organization has been announced by Victor Emanuel, chairman and president, Avco Mfg. Corp.

The election of H. Webster Crum as vice president was also announced. Crum will coordinate all defense and industrial sales, reporting to S. B. Withington, vice president.

ANOTHER CASE OF DETREX Service WITH A Saving AT WORK

CUTS METAL CLEANING COSTS 2/3

A sure and easy way to cut your cleaning costs is to follow the lead of Servel, Inc. —

In the production of their automatic ice maker, refrigerators and air conditioning products, metal cleaning plays an important role in relation to both quality *and* costs. And, on those parts which are porcelain enameled, the importance of metal cleaning is especially critical. Here are the savings that resulted when Servel and the local Detrex field technician worked together on the subject.

To begin with, a Detrex cleaner specially developed for porcelain enamelers was recommended. Results on a lab basis looked good . . . production results were outstanding. On the basis of accurately compiled data, costs have dropped ⅔ . . . one million square feet of metal is cleaned at a total cleaner cost of less than $60.00. Quality is excellent.

Guaranteed results in your plant, too . . .

We guarantee to improve your cleaning operations, regardless of the parts being processed, the soil being removed, or the type of cleaning required! Only Detrex can make this offer because only Detrex makes *both* the chemicals and equipment for *all* types of cleaning . . . alkaline and emulsion washing, solvent degreasing, even cleaning with sound waves.*

You can get all the facts by filling out the coupon below. Do it now for lower costs.

*Detrex Soniclean Process®

Please send me the Detrex Cleaner file. We'd also like data on how we can cut our metal cleaning costs and improve quality.

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

DETREX CORPORATION

DEPT. HD-107, BOX 501, DETROIT 32, MICH.

A fresh sheaf of orders — *for duplex freezer-refrigerators and how they affect production timetables — are discussed by these officials of Deepfreeze Home Appliances. Left to rigtht: J. A. Rishel, Jr., general sales manager; F. F. Duggan, vice president and general manager; Pat Leone, manager of operations; and H. W. Whitmore, director of engineering. They stand beside a line of two-door models of the new combination appliance, about to be shipped from Lake Bluff, Ill., plant.*

AHLMA parts and service committee — *held quarterly meeting recently in LaPorte, Indiana, where they were guests of Whirlpool's service department. Shown with Les Vinsek (left), of Whirlpool, are Frank W. Buelow, of Speed Queen, and D. R. Tripp and S. R. Payne, of Maytag. Other members of the American Home Laundry Manufacturers Association committee attending the meeting included: C. L. Atkinson, Jr., Easy; C. W. Altman and C. Ruelle, Hamilton; R. S. Geran, Kelvinator; C. E. Bick, Avco; J. G. Praetz, Hotpoint; L. K. Baxter and A. E. Schaller, Westinghouse; J. B. Dobbertin, Conlon-Moore; J. R. Chapman and Fred King, Whirlpool; and Guenther Baumgart, executive secretary of AHLMA.*

ADMIRAL RANGE SALES UP 10%

Admiral Corp.'s electric range sales in the first nine months of 1954 were nearly 10% higher than during all of 1953 — the company's previous record year, reported Lee H. D. Baker, vice president-appliances.

JORDON SALES TOP 1953

Jordon Refrigerator Company's gross sales volume for 1954 will top $15,000,000, with increased sales of between 20% to 25% over 1953, Frank Fogel, president, announced.

3 WESTINGHOUSE PRODUCTS HIT ALL-TIME SALES HIGH

Sale of Westinghouse electric refrigerators, dryers and food waste disposers have reached an all-time high during the first ten months of 1954, it was announced by John H. Ashbaugh, vice president, Westinghouse Electric Appliance Division, Mansfield, Ohio.

GAS RANGE, WATER HEATER SHIPMENT RISE IN OCTOBER

Edward R. Martin, Gas Appliance Manufacturers Association director of marketing and statistics, reported that 210,800 gas water heaters were shipped to distributors and dealers in October, 8.5% above the 194,300 shipped in October, 1953.

Domestic gas range manufacturers shipped 217,100 units during October, 6.5% above the 203,900 shipped during the same month of 1953.

VACUUM CLEANER SALES 2ND HIGHEST SINCE 1953

Factory sales of 263,197 standard-size household vacuum cleaners in October were second highest since March, 1953, when the total was 329,294, being topped only by sales of 276,464 units in March, 1954, according to the Vacuum Cleaner Manufacturers' Association, Cleveland, Ohio.

October sales were 10.5% above September and 5.5% above October, 1953.

AMANA REFRIGERATION SALES VOLUME UP 35%

Sales volume of Amana Refrigeration, Inc., Amana, Iowa, was up 35% in 1954 over 1953, the firm's best previous year, according to a report made by George C. Foerstner, executive vice president, at the firm's recent distributor convention.

ASTM committee — *on porcelain enameling met recently at the new Columbus, Ohio, plant of Westinghouse Electric Corp. The committee honored Ralph F. Bisbee, manager of quality control for the Westinghouse merchandising headquarters plant in Mansfield, Ohio, by electing him as second vice chairman of the Porcelain Enameling Committee of the American Society for Testing Materials. Approximately 50 leaders of the country's enameling industry attended the meeting. Shown in the photo are S. E. Sites (left), manager of quality control at the Columbus plant, Ralph F. Bisbee (center), and W. N. Harrison, of National Bureau of Standards*

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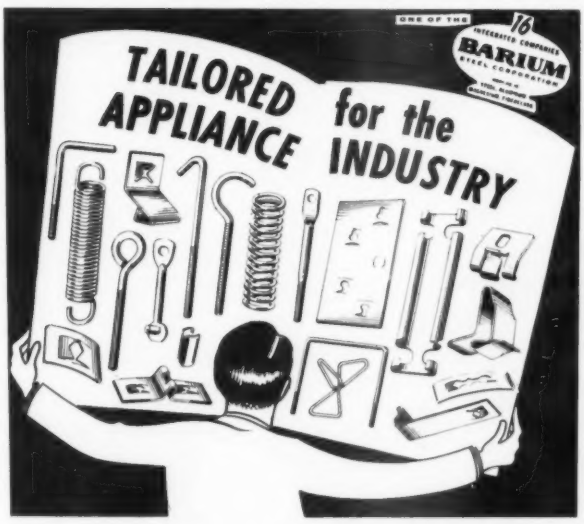

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SUBSIDIARY OF THE BARIUM STEEL CORP
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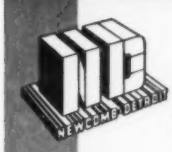
NEWCOMB-DETROIT

PIONEERS IN ENGINEERING, MANUFACTURING & INSTALLING OF



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NEWS ABOUT SUPPLIERS

DETROIT BRASS CHICAGO MGR.

Henry A. Mark is reported to be the new Chicago district manager for Detroit Brass & Malleable Co.

ARMCO ELECTS GRAY EXECUTIVE VICE PRESIDENT

R. L. Gray has been elected executive vice president of Armco Steel Corp., Middletown, Ohio, announced W. W. Sebald, president.

Gray was president of the Sheffield Steel Corp., a wholly-owned subsidiary of Armco which recently became the Sheffield Steel Div. He has been a member of the board since 1940 and a senior vice president.

HUBER TO EXEC. ASS'T SALES POST AT PEMCO

George Huber has been promoted to executive assistant sales manager of Pemco Corporation, Baltimore. A ceramic engineering graduate from Rutgers University, he also received a post graduate degree from the Harvard School of Business Administration. Charles P. Lohman is sales manager for Pemco.

FEDERAL MACHINE DIRECTOR

David A. Wallace has been elected a director of Federal Machine & Welder Co., Warren, Ohio, according to a recent announcement.

U. S. STEEL ANNOUNCES EXECUTIVE CHANGES

Bennett M. Livezey has been assigned to the vice president's office for special duties, according to Edward C. Logelin, vice president, United States Steel Corp., Chicago.

Oscar Pearson has been named general superintendent, South Chicago works, and Ralph W. Dickson, assistant general superintendent, Youngstown district works, it was announced by J. H. Elliott, vice president operations-steel.

BOHN PURCHASES REO MOTORS

Transfer of ownership of Reo Motors, Inc., Lansing, Michigan, to Bohn Aluminum and Brass Corp., Detroit, effective December 31, has been announced by Simon D. DenUyl, Bohn president.

WIGGINS TO REPRESENT DETREX IN NEW YORK

Platt K. Wiggins has been appointed sales representative covering western New York for the Detrex Corp., Detroit, announced W. F. Newbery, director of sales. Wiggins was formerly a member of the sales staff of Proctor & Gamble.

PENNSALT BUYS GILRON

J. J. Duffy, Jr., sales manager, Pennsylvania Salt Mfg. Co., Philadelphia, has announced Pennsalt's purchase of Gilron Products Co., Cleveland, Ohio.

HOUDAILLE-HERSHEY NAMES SANDBERG AND BOEHM

Eric Boehm has been appointed manager of the North Chicago (Ill.) division of Houdaille-Hershey Corp., according to an announcement by Charles Getler, president.

Ray A. Sandberg has been made chief engineer.

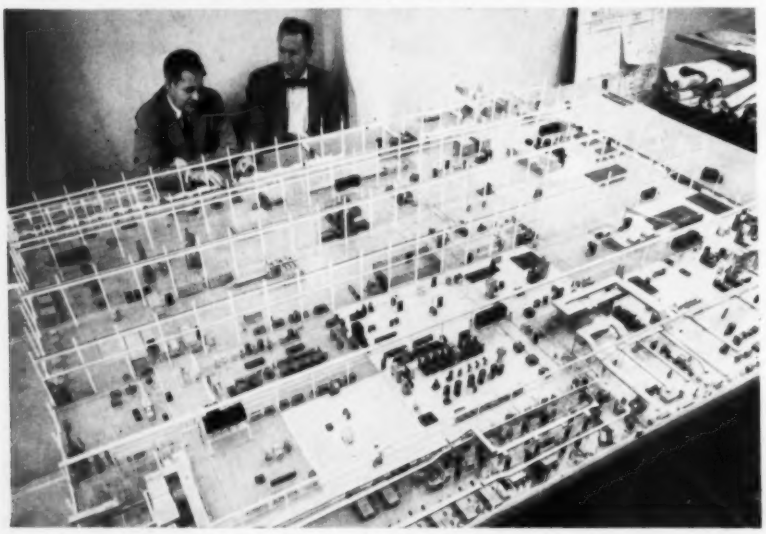
INLAND STEEL ANNOUNCES KEY SALES CHANGES

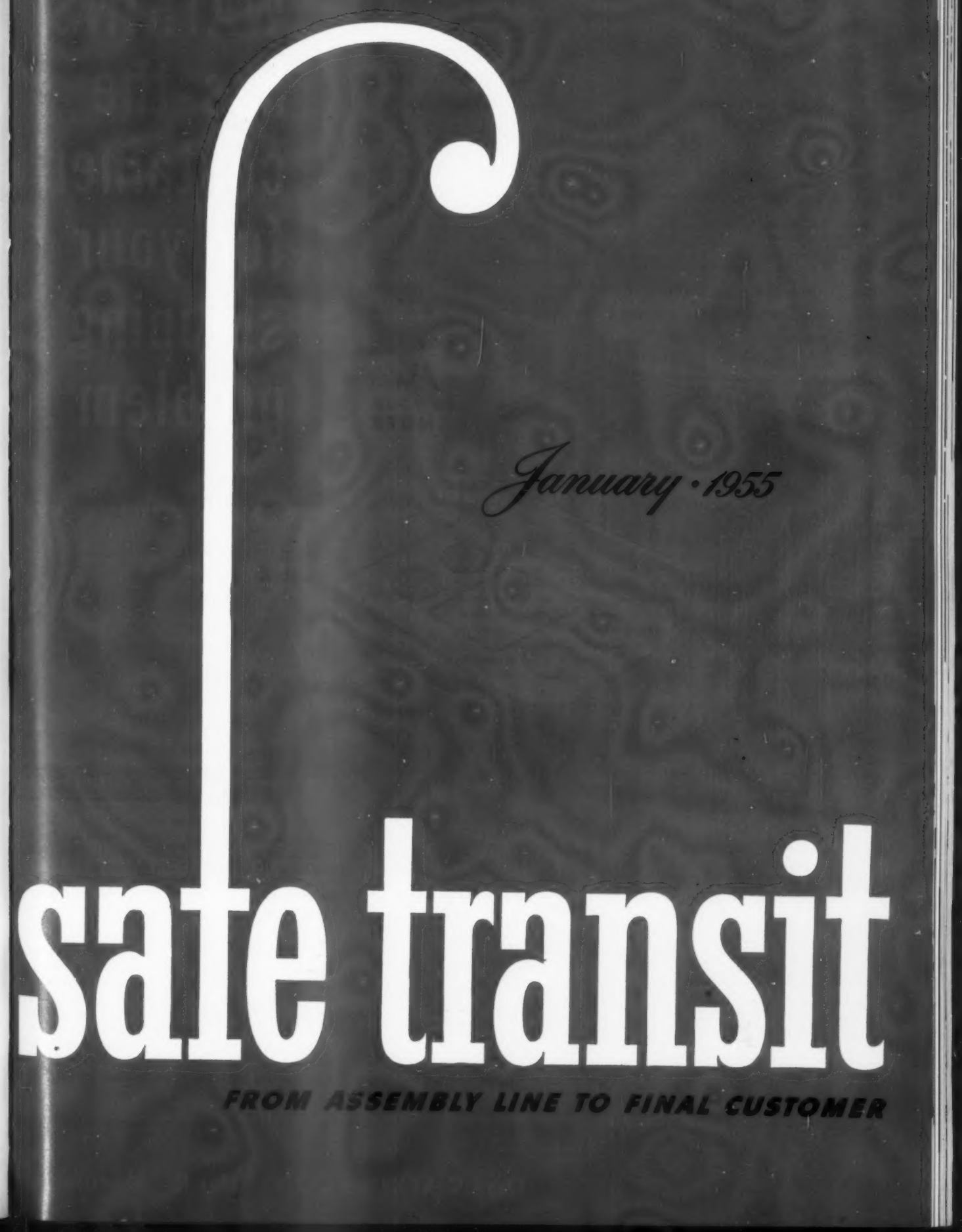
Clarence L. Holmberg, formerly general sales manager, Inland Steel Co., has been appointed assistant to the vice president in charge of planning and administration.

Benton J. Willner, formerly assistant general sales manager, Inland Steel Co., has been appointed to the newly-created position of assistant to the sales vice president.

Robert M. Buddington, also an assistant general sales manager, has been named general manager of sales, and John G. Mack Jr., has been made assistant to the general sales manager.

Model of "tomorrow's metals" plant — *being built by Westinghouse Electric Corp. at Blairsville, Pa. The multi-million dollar plant is for the development and pilot production of new metal alloys and special castings. Powdered metal parts also will be manufactured in the 480 ft-long plant. Examining the model are Warren M. Trigg (right), plant manager, and Lloyd L. Friend, supervising engineer in charge of construction.*




January • 1955
safe transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

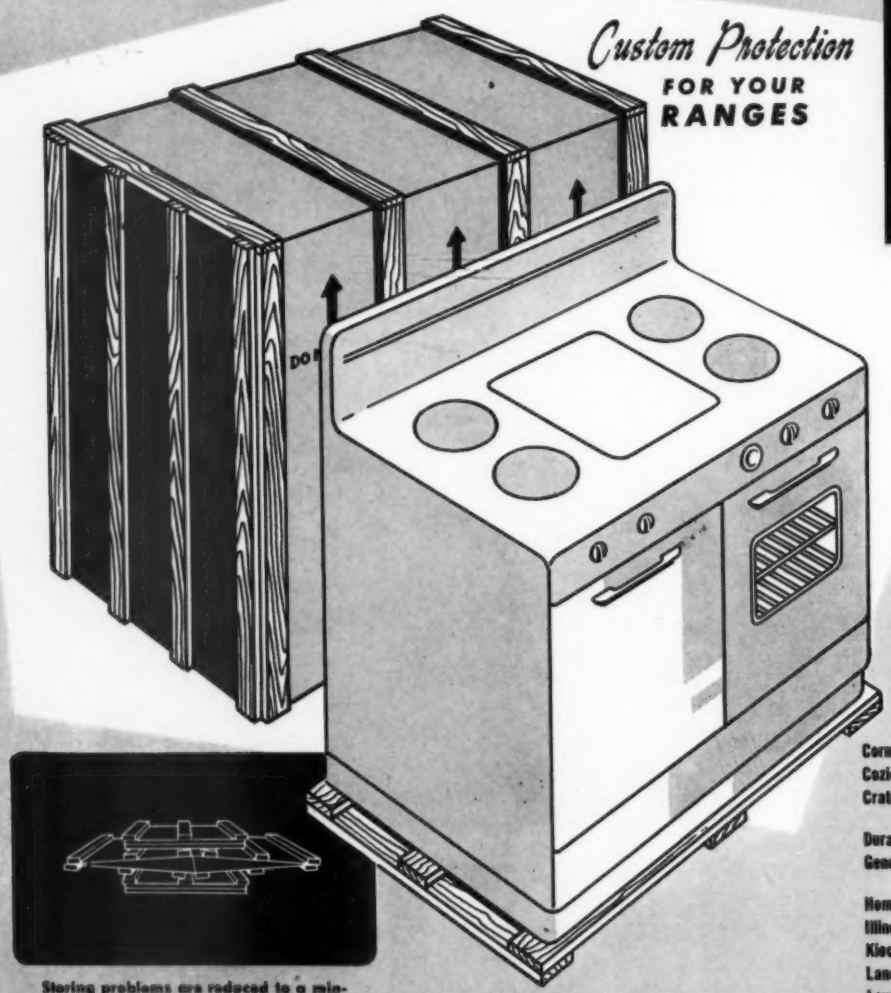
WATKINS has the container for your shipping problem

For home appliances, for *all* types of finished products, the Watkins Container is your best insurance for safe delivery. Your product is enclosed 100% by a smooth, staple-free interior to safeguard fine finishes and to keep out dust and dirt. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured.

The "Traveling Billboard" feature of Watkins Containers is another feature to consider. Your advertising message can be printed in two colors, on all four sides.

Only Watkins Containers provide *all* of these many desirable and necessary features, and at no greater cost than other types of containers. Ship your carefully manufactured products safely and economically—ship them the "Watkins Way."

Custom Protection
FOR YOUR RANGES



Storing problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.

these companies build WATKINS containers

Cornell Paperboard Products Co. .... 1514 E. Thomas Ave., Milwaukee
Cozier Container Corp. ..... 446 East 131st Street, Cleveland
Crate-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc. ..... 10901 Russett Street, Oakland, Cal.
Dura-Crates, Inc. .....940 East Michigan Street, Indianapolis, Ind.
General Box Co. ..... 1825 Miner St., Des Plaines, Illinois
16th and Maple Sts., Louisville, Ky.
Hemb & Martin Mfg. Co......P. O. Box 108, Murfreesboro, Tenn.
Illinois Box & Crate Co. ..... 811 Center Street, Plainfield, Ill.
Kieckhefer Box & Lumber Co. .... 1715 West Canal Street, Milwaukee
Lane Container Corp. ..... 10212 Denton Road, Dallas, Tex.
Lewisburg Container Co. ..... 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. .....Tillsonburg, Ontario, Can.
Love Mfg., Inc. ..... 608 South Commerce Street, Wichita, Kans.
Pennsylvania Box & Lumber Co..... 2331 N. Bodine St., Philadelphia 33, Pa.
Utility Crate Corporation ....1985 E. 16th Street, Los Angeles 21, Cal.

—an inquiry to any of these companies will get prompt attention

The · WATKINS CONTAINER · Manufacturer

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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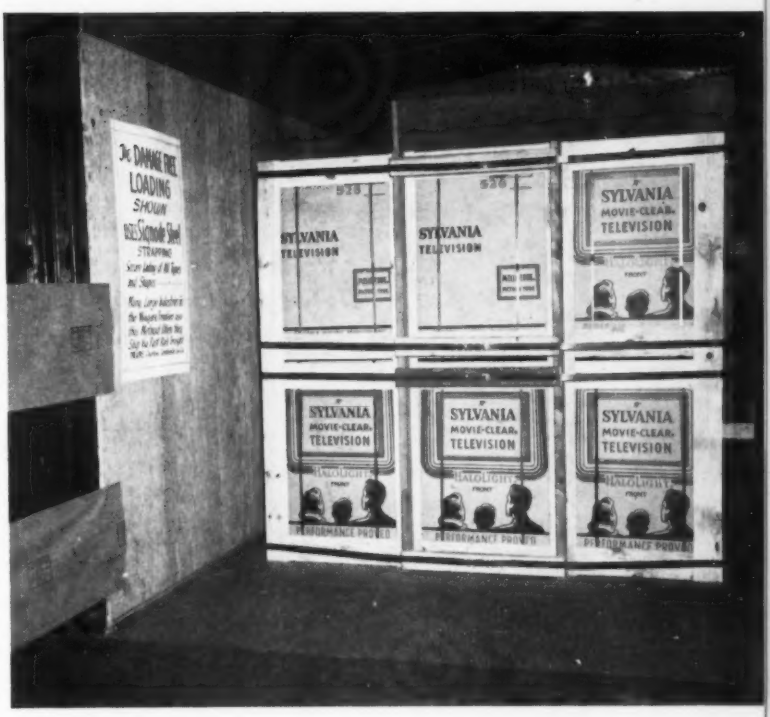
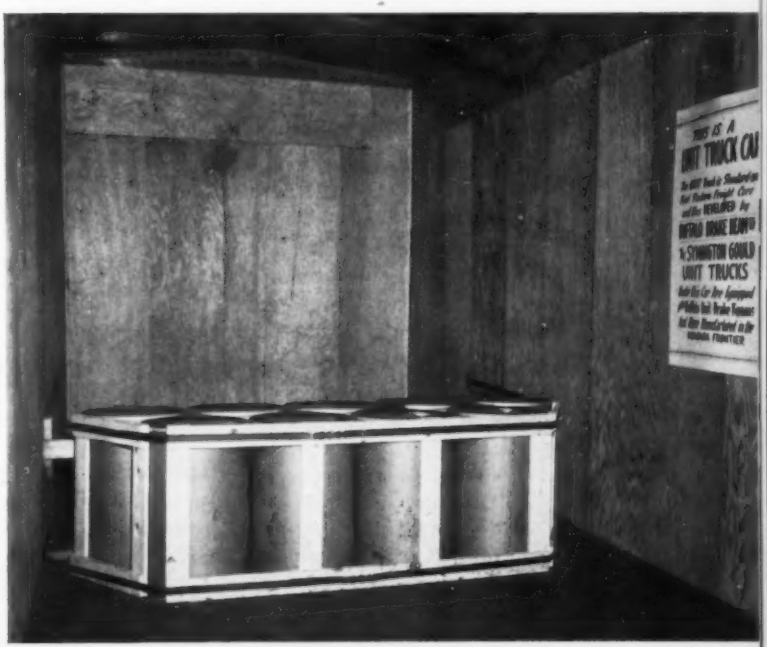


***Railroad week** — held recently in Buffalo, N. Y. — was highlighted by demonstrations of "safe damage-free loading." Manufacturers cooperated to show both the railroads and the public what was being done to make lading arrive at destination safely. Signode Steel Strapping Co. demonstrated wall-anchored loading method (above), using TV containers furnished by Sylvania Electric Products Co., Buffalo. While these were not fully loaded cars, visitors could easily see the application of methods that have been successfully developed for shippers such as Sylvania. Fibre drums furnished by Continental Can Co., Tonawanda, N.Y., indicated (below) another way steel strapping is effectively applied to assure safe arrival. The loading methods shown here were demonstrated by the Buffalo office force of Signode Steel Strapping Co.*



The SAFE TRANSIT laboratory helps you help yourself

38 certified laboratories in 16 states are helping

by F. A. Petersen • CHAIRMAN, LABORATORY COORDINATING DIVISION, NATIONAL SAFE TRANSIT COMMITTEE.

Endorsed by safe transit

Between the time of shipping and the receipt of shipping complaints is a time span of as much as two months, but today's manufacturer need no longer hazard two months of bad shipping damage. He need no longer wait to have the answers to those plaguing questions — "What if our trial shipments to various cities were not subjected to average shipping conditions? . . . What if that change in product results in unexpected shipping damage? . . . What if that new crate is not a saving after all? . . ." So went the questions that became out-dated when the National Safe Transit Program brought into existence the Safe Transit laboratory.

Now 37 laboratories located throughout the country are equipped to conduct the Safe Transit test procedures. These are the test procedures that were developed by the National Safe Transit Committee and have won the recognition of shipping authorities because they duplicate in the laboratory the conditions encountered by packaged products in actual transit. As one manufacturer remarked, "We don't have to wait for reports from dealers. We can watch a trial shipment being made — be on hand ourselves when tests are made in the Safe Transit laboratory, and see the condition of our products after shipment."

For certification under the National Safe Transit Program, a laboratory must have the following equipment:

1. *Vibration testing machine,* which determines the ability of the packaged product to withstand vibration shocks encountered during transportation. Conditions simulated include: resonance, flat car wheels, rail joints, rough road beds or roadways, car sideway, etc.

2. *Conbur incline impact testing device,* which simulates the longitudinal shocks and impacts as received in actual shipment during various kinds of transportation. These are the shocks which are received in handling. Hundreds of shipments established that it was during handling that maximum shocks were sustained. These shocks extended well into the 5th zone of a recognized recording instrument. This 5th zone, or its equivalent, was established as the

NOTE: The latest certified laboratory is The Weston Paper & Manufacturing Co., Terre Haute, Indiana.

CERTIFIED LABORATORIES

NATIONAL SAFE TRANSIT COMMITTEE

Washington 6, D. C.

minimum requirement for the packaged product.

3. *Recording instrument* for accurate measurement of shocks.

4. *Drop tester,* which is used to simulate the shock incident to the handling in transportation of products under 100 lbs.

38 laboratories in 16 states

The Certified National Safe Transit Laboratory plays an important part in the overall National Safe Transit Program. The readily available location of the laboratories in 16 states makes it convenient for certified manufacturers or manufacturers seeking certification under the National Safe Transit Program to have checks run to determine the ability of their PACKAGED PRODUCTS to conform to the Safe Transit specifica-

to Page ST-10 →

what the laboratories say →

(More laboratory repo

Container Laboratories, Inc.

At both our Chicago and New York laboratories, we have made many check tests for clients in accordance with the procedures of the National Safe Transit Program . . . We have been able not only to tell shippers whether their packages met the requirements of the NST program, but also to advise them on measures to be taken to improve their packages, reducing both damage and costs.

Charles J. Zusi
Chicago, Illinois

The Mengel Company

"Our laboratory has solved a troublesome problem in the shipment of room cooler cabinets manufactured by Fedders-Quigan which were being damaged due to rubbing of the face of the cabinet.

"We found that protective packing was actually causing the trouble and that we could eliminate this trouble by the proper use of corner posts and slit liners. Our laboratory findings have been confirmed by actual shipments in the redesigned package."

Corrugated Box Division
Fulton, New York

"While the National Safe Transit Program has proven itself for commodities originally falling within its scope, our laboratory testing facilities are also being successfully used for a growing variety of general merchandise. For example, our vibration tester demonstrated what was the cause of complaints and losses on 600# bales of cloth which had been strapped heretofore under 3000# of pressure.

"Four hours of vibration demonstrated that the straps worked loose. As a result, the pressure in packing the bales was increased to 6400# before strapping. With this additional pressure, the straps remained tight and unmovable. Since the adoption of the increased pressure, damage, losses and complaints have been stopped."

Corrugated Box Division
Winston-Salem, N.C.

The Mengel Company

"The consensus regarding the National Safe Transit testing program in our laboratory was well expressed by Richard Douglas, Jr., Director of Purchasing, for Temco, Inc., manufacturers of heating equipment. Mr. Douglas said, 'Since participating in the National Safe Transit Program all new packages are thoroughly tested in the certified laboratory of our supplier. With this procedure, the claims resulting from damage in transit are negligible.' "

Nashville Corrugated Box Co. (Div.)
Nashville, Tennessee

Inland Container Corp.

"The NST pre-shipment program establishes a definite performance standard for use in checking the adequacy of packed merchandise and a method of determining compliance. This standard provides our package designers with a powerful tool of great value in developing safe economical shipping containers for our customers.

"The value of the program to our customers' product designers likewise is of major importance at times. Through application of the standard test procedures, the container engineer can quickly develop a package suited to the needs of the product. This package can be submitted to the shipper with assurance that its performance in service will be satisfactory."

W. B. Lincoln, Jr.
Indianapolis, Indiana

ebruary issue)

American Gas Association Laboratories

Manufacturers of gas appliances . . . are continuing to submit their packaged appliances for test in compliance with the National Safe Transit requirements.

While there has been considerable improvement in the packaging and crating, some manufacturers are still running into minor difficulties with enamel chipping and breakage, which has prevented us from recommending certification of some products to the National Safe Transit Committee.

We have conducted considerable testing of packaged automatic storage gas water heaters for our local manufacturers. This testing involves, principally, experimental crates and changes which some of our manufacturers contemplate from crates previously tested and certified.

W. H. Vogan
Pacific Coast Branch
Los Angeles, California

Fort Wayne Corrugated Paper Co.

Quality control and the NST program fit like a mortise and tenon joint. Honest pre-shipment testing and high quality boxes are necessary if we are to contribute our share in reducing packaging and shipping losses.

Many box manufacturers have been and still are reluctant to discuss performance testing with shippers. After boxes and parts leave a maker's plant, he loses control. He cannot be sure that his boxes will be packed properly or how they may be treated by the carriers. His fear has been tied to an impossible performance guarantee. A great deal of credit is due NST for dispelling this fear by pointing out that pre-testing is 'preventive medicine' and not necessarily a guarantee that the patient will never become ill.

"The shipability of a new product, or the proper assembly of an old one, is extremely important. Several of our customers have been first amazed and then appreciative to learn that their newest 'brain child' was not designed to take reasonable shipping hazards when subjected to NST testing procedures. By re-designing and successful re-testing, they saved many dollars and untold headaches. In two cases, customers began to get complaints where none existed before. The vibrator and Conbur tests indicated the trouble was bad practices on their own assembly lines, and controllable by better supervision."

J. H. Crawford
Fort Wayne, Indiana

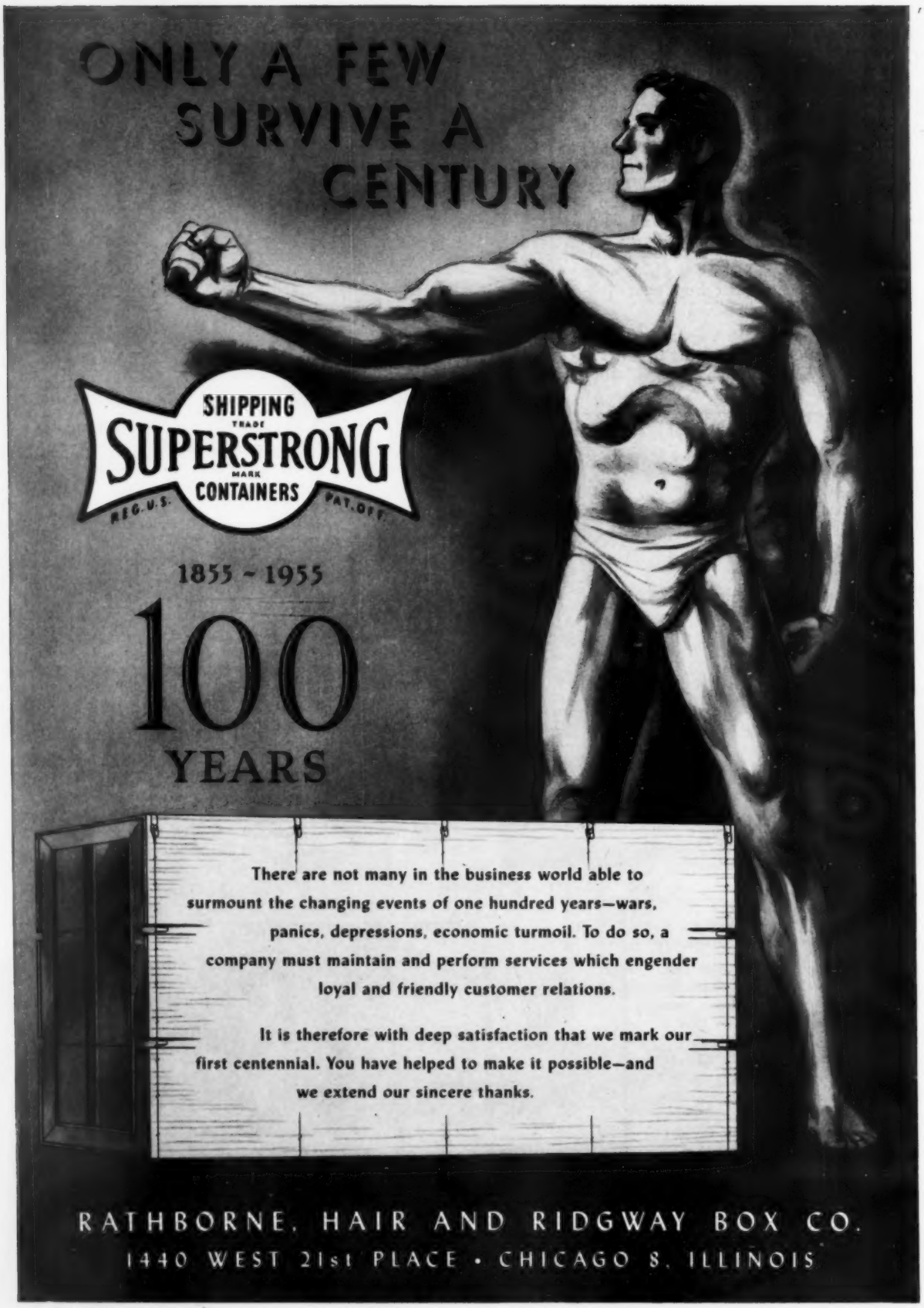
Chicago Mill and Lumber Company

"We have conducted Safe Transit Tests on crated appliances for more than five years, and many of our clients have benefitted from this test work in either one of two different ways.

"(1) Although some of our clients were not experiencing very much damage under normal handling and shipping practices, yet we were able to reduce their shipping damage losses to a bare minimum by correcting weaknesses in their own boxes or crates or developing a properly designed box or crate for their product.

"(2) In some instances we have been able to make suggestions which enabled the product designer to bolster his product so that the cause of previous breakdowns of the product was eliminated. At the same time we have been able to reduce the crating costs to more than offset the costs added to the product."

F. W. Stuart
Chicago, Illinois


ONLY A FEW SURVIVE A CENTURY
SHIPPING TRADE SUPERSTRONG MARK CONTAINERS
REG. U.S. PAT. OFF.
1855 ~ 1955
100 YEARS
There are not many in the business world able to surmount the changing events of one hundred years—wars, panics, depressions, economic turmoil. To do so, a company must maintain and perform services which engender loyal and friendly customer relations.
It is therefore with deep satisfaction that we mark our first centennial. You have helped to make it possible—and we extend our sincere thanks.
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THE TRANSIT LINE

. . . . *faint praise*

Since the idea for the cooperative plan which is called the National Safe Transit Program had its inception in the offices of *finish*, the Magazine of Appliance and Metal Products Manufacturing, and —

Since *finish* has served as the educational medium or "editorial voice" for the program since its inception in 1948, and —

Since this "Safe Transit" section has carried the educational banner for the program since January, 1950 —

Our editors are naturally extremely interested in *all* of the published information on NST.

For the record

The purpose of this editorial is to keep the record straight with respect to NST progress.

A recent editorial in an appliance magazine outlines some of the advantages of the NST plan to participating companies.

It then goes on to say:

. . . "With all this direct evidence of immediate benefits for participating companies, and with the broad aims of the group which could result in holding down or reducing shipping and insurance costs, it is surprising that only 137 appliance manufacturers are participating. A little more than a dozen of these firms joined the program within the past year.* That figures out to be slightly more than ten per cent of all appliance manufacturers — a rather sad commentary on the alertness with which so many appliance companies credit themselves." . . .

The facts are these: 181 manufacturers of appliances and allied products are now certified as participating companies. — 34 manufacturers were certified between the publication of lists in August '53 and September '54. — 15 joined the ranks between September '54 and this writing (December '54).

Aug. '53 — 132; Sept. '54 — 166; Dec. '54 — 181.

In addition, there are 38 Certified Safe Transit Laboratories conducting tests for scores of other manufacturers, many of whom will want the privilege of using the Safe Transit label once they determine for themselves the effectiveness of the labeling program. (See laboratory experience, pages ST-6 and ST-7.)

*Underlining added by *finish*

Big producers

"181" as a number doesn't look particularly big. Consideration should be given to the fact that these certified companies represent 181 of the largest producers in the world. A. L. Green, special representative, Freight Claim Division, Association of American Railroads (now retired), stated in *December of 1951*, . . . "The National Safe Transit program in a short space of three years has enrolled some *90 manufacturers* of home appliances *(about 70% of volume)* . . ." No recent estimates have been made.

Now with "the big ones" in, the time has come to focus attention on the medium and smaller sized manufacturers — not because their companies will add a big percentage to the production figures now covered, but because it is the desire of the NST committee that *all* companies, large or small, receive the advantages of the voluntary-cooperative pre-shipment testing program.

A never-ending job

There is still much work to be done and much progress to be made, but we believe that the Coordinating and Sponsoring association — The Porcelain Enamel Institute and the hard working committee of *voluntary unpaid* workers, headed by Ralph Bisbee, of Westinghouse, deserve nothing but commendation for the progress made to date.

The problem of in-transit damage has been with industry since the first product was shipped by rail, truck or by air. The NST program represents the *FIRST* successful cooperative plan for licking the problem through the combined efforts of the product manufacturers, the packaging laboratories, the container suppliers and all of the carrier groups.

Let's all get behind the program and push!

THE EDITORS

As educational chairman of NST, the editor of *finish* offers complete cooperation: policy information, test data, case histories, photographs, etc., to *all* publications whose editors are interested in advancing the program within the scope of the general plan.

The Safe Transit laboratory helps you help yourself

(Continued from Page ST-5)

tions. It is on the basis of satisfactory reports filed by the Safe Transit Laboratory that the National Safe Transit Committee authorizes a manufacturer to identify his packaged products with the Safe Transit label. This is the coveted red and yellow label that has become familiar to handling personnel throughout the country as the emblem of the manufacturer who has done his part to assure safe delivery of his packaged product.

Manufacturers who have their own Safe Transit testing equipment use the testing facilities of Safe Transit Laboratories to correlate and substantiate day-to-day testing.

An aid to quality control

The Safe Transit tests have become an important factor in maintaining quality control, and most Certified companies have worked out with their Safe Transit Laboratory a periodical testing schedule. One manufacturer states, "We believe that frequent testing also reduces the number of minor annoyances which the dealers never reported, but, nevertheless, were a strain on our dealer relations. Now we can catch these minor items in our own plant and report them to the department affected for correction. This method points the way to constantly improving our product".

At a meeting of Certified Laboratories and the Safe Transit Policy Group, this matter of periodical testing was stressed again. The rules governing use of the Safe Transit label were reviewed, and reaffirmed was *the necessity to run through tests on the packaged product any time:*

1. *The product design is altered*
2. *The package is changed*
3. *Interior packaging is changed*

The Safe Transit Laboratory together with carriers and all participants are committed to working toward the goal of reducing in-transit damages to an absolute minimum. The Safe Transit Laboratory has therefore always filled an important role in the educational field. Their personnel have served as instructors for many university courses on packaging. Other laboratories have conducted packaging seminars of their own. These seminars have demonstrated how the Safe Transit tests eliminate the trial and error method in the design and packaging of products.

Many a manufacturer working with a Safe Transit Laboratory has developed new packaging for his product that has realized him considerable savings in packaging costs as well as reduced transit losses. The Safe Transit Laboratory claims their testimonials as their best work in the field of education. And so they are, for perhaps more than anything else these pleased manufacturers have helped to spread the word that the day of trial and error methods are over. The Safe Transit Laboratory has removed the blindfold from the shipper's eyes.

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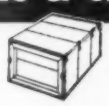

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Safe Transit committee establishes Canadian section

representives of leading appliance producing firms attend organization meeting in Toronto

MORE than 100 representatives of industry and carriers attended a meeting held in Toronto, November 29, for the purpose of organizing a Canadian Section of the National Safe Transit Committee. The meeting was held in response to the enthusiasm of Canadian industry and other groups who felt that wide scale adoption of the Safe Transit preshipment testing program would contribute greatly toward reducing Canada's in-transit damage losses.

Representing the National Safe Transit Committee, with headquarters in Washington, D. C., were R. F. Bisbee of Westinghouse Electric Corporation, NST general chairman, and John C. Oliver, of the Porcelain Enamel Institute, NST secretary.

Packaging association technical secretary is section chairman

Safe Transit activities in Canada will be coordinated through Stuart Williams, the Section chairman for Canada. Williams is technical services secretary of the Packaging Association of Canada. To aid Williams in carrying out duties and responsibilities, a Committee patterned after the Washington headquarters organization was established. This Committee included John Houser, Canadian Westinghouse Company Limited; Joe Collins, Canadian General Electric Co., Ltd., John Harbon, editor of the publication, "*Canadian Packaging*"; and George Otter, of Moffats Limited.

In his presentation of a charter to the newly formed group, Oliver stressed the voluntary, cooperative, and non-profit nature of Safe Transit activities. He reviewed the organization of the Committee, pointing out the inter-dependence of each group represented. "The Committee", he said, "has as its objective the reduction of in-transit damage to an absolute minimum. We are aware," he said, "that no one group—carrier, industry or any other group—is going to achieve so large a goal alone. It is dependent upon the contribution of each, and the cooperation of all. The success of the Safe Transit Program does not rest alone", he stressed, "in the pre-testing procedures that have become the first international standard in history to be recognized by leading manufacturers, laboratories and carrier associations. The National Safe Transit Program offers more than that. It provides the framework wherein each can make his contribution, and all can work together toward the one objective. It is", he concluded, "in this spirit that we meet today to establish together the Canadian Section of the Committee. We are confident that this will be a meaningful time in Canadian shipping as it will be in the progress of the Safe Transit Program."

At the conclusion of his remarks, Oliver presented to Stuart Williams a charter in recognition of the newly formed Canadian Section.

Williams, accepting the charter on behalf of the group, responded by reaffirming the conviction of the Canadian group that the National Safe Transit program offered to Canadian carriers, industry, and container firms, the same opportunity as it has to these organizations in the United States. He mentioned that Canadian General Electric Co., Ltd., Canadian Westinghouse Co., Ltd., and Moffats Limited were already participants in the National Safe Transit Program and gave to both carriers and industry in Canada an invitation to take part in launching the program in Canada on a far reaching scale.

R. F. Bisbee reviewed the history of the NST program in the United States. "The program has been in effect about six years", he reported, "with the result that millions of dollars have been saved by manufacturers alone. This was made possible through both cost reduction in packaging, reduction in shipping losses, and last, but not least, building up a better quality control system and improving customer relations."

Questions from the floor following the brief talks centered primarily on various aspects of the Safe Transit test procedures and on the Safe Transit Label and Car Placard. Canadian manufacturers and carrier representatives present agreed that they would like to see wide adoption of these emblems of participation. Both the Safe Transit label and car placard will be available to Canadian firms through the Washington headquarters office.

Following the general meeting, the Canadian Section Chairman and other members of the Canadian group met with Bisbee and Oliver and made further plans for the immediate future. Bisbee recalled that Prime Minister Louis St. Lauret, in an address to the International Municipal Congress at the International Conference of Mayors in September, 1953, had stressed the importance of closer cooperation between the industries of Canada and the United States. "I think", Bisbee said, "the meeting today is what he means. We, on the Safe Transit Committee, are forever amazed at the magnitude of the opportunity each of us shares in this program."

CERTIFY REPUBLIC STEEL BERGER DIVISION, SIMONDS, WESTINGHOUSE (N. C.) PLANT

The National Safe Transit Committee has announced that three new certifications have brought the total of NST-certified companies to 181.

The new certifications are Berger Mfg. Div., Republic Steel Corp., Canton, Ohio; Simonds Abrasive Co., Philadelphia, Pa.; and Westinghouse Electric Corp., Raleigh, N. C.

The B G Tight Corner is Stronger

Warehouse of a large Department Store, showing gas ranges stored in Bigelow-Garvey "Tight Corner" collapsible hinged crates.

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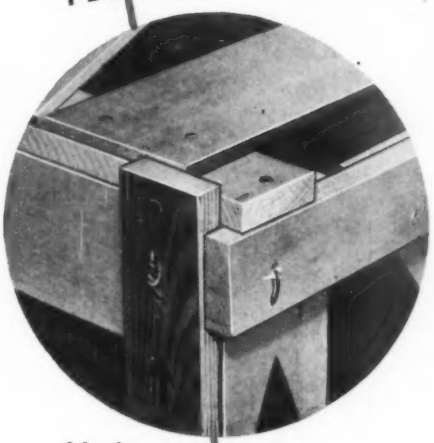

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